

CORRECTIVE ACTION PROCESS REPORT/PLAN COVER SHEET
CHAPTER 245 - STORAGE TANK AND SPILL PREVENTION ACT

Storage Tank Facility ID #: 51-33620

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Media of Concern: **Soil** **Groundwater**

Contaminant(s) (e.g. unleaded gasoline): petroleum products

(check all that apply to the enclosed submission)

- Remedial Action Progress Report**
- Risk Assessment Report (e.g. vapor intrusion, ecological, or human health risk calculations)**
- Site Characterization Report – Section 245.310(b)**
 - Residential Nonresidential
- Site Characterization Report – Statewide Health or Background Standard**
 - Residential Nonresidential
- Site Characterization Report – Site Specific Standard**
 - Residential Nonresidential
- Remedial Action Plan – Statewide Health or Background Standard**
 - Residential Nonresidential
- Remedial Action Plan – Site Specific Standard**
 - Residential Nonresidential
- Remedial Action Completion Report – Statewide Health or Background Standard**
 - Residential Nonresidential
- Remedial Action Completion Report – Site Specific Standard**
 - Residential Nonresidential
- Post Remediation Care Report**
- Environmental Covenant**
 - Draft Final
- Other:** _____

FINAL

Site Characterization Report - Tank Group 04

Former Philadelphia Energy Solutions Refinery
3144 West Passyunk Avenue
Philadelphia, Pennsylvania
Incident #57976

Prepared for

Philadelphia Energy Solutions Refining and Marketing LLC
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Prepared by

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February 2023

Project Number P044.001.002



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Acronyms and Abbreviations

25 PA Code	Title 25 Pennsylvania Code
Act 2	Pennsylvania Land Recycling and Environmental Remediation Standards Act
Act 32	Storage Tank and Spill Prevention Act
AOI	Area of Interest
AOI 4 RIR	Remedial Investigation Report, Area of Interest 4
AST	aboveground storage tank
bgs	below ground surface
COPC	constituents of potential concern
DCNR	Department of Conservation and Natural Resources
Evergreen	Evergreen Resources Group, LLC; includes Sunoco, Inc. n/k/a ETC Sunoco Holdings LLC, Sunoco, Inc. (R&M) n/k/a Sunoco (R&M), LLC n/k/a Energy Transfer (R&M), LLC and Evergreen collectively referred to as “Evergreen”
Facility	former Philadelphia Energy Solutions refinery facility
ft	feet or foot
LNAPL	light non-aqueous phase liquid
mg/kg	milligrams per kilogram
MSC	medium-specific concentrations
MTBE	methyl tert-butyl ether
South Yard	Point Breeze Refinery South Yard
PADEP	Pennsylvania Department of Environmental Protection
PESRM	Philadelphia Energy Solutions Refining and Marketing LLC
PID	photoionization detector
PNDI	Pennsylvania Natural Diversity Inventory
RBSL	Risk based screening level
the Site	Tank Group 04 location within the former Philadelphia Energy Solutions refinery facility
SHS	Statewide Health Standard
SSS	Site-Specific Standard
Terraphase	Terraphase Engineering, Inc.
TMB	trimethylbenzene
TPI	TPI Environmental, LLC
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
Work Plan	<i>Aboveground Storage Tank Closure Work Plan</i>



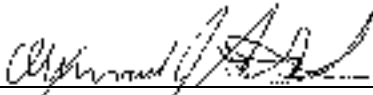
Certification

Pursuant to the requirements of the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2), adopted May 19, 1995, which states:

Interpretation of geologic and hydrogeologic data shall be prepared by a professional geologist licensed in this Commonwealth.

I hereby attest that, as a Professional Geologist licensed in the Commonwealth of Pennsylvania, I am familiar with, and have reviewed and/or prepared the interpretation of the geology and hydrogeology presented in the attached report entitled, *Site Characterization Report – Tank Group 04, Former Philadelphia Energy Solutions Refinery, 3144 West Passyunk Avenue, Philadelphia, Pennsylvania*, dated February 2023.

Based on the available data represented in the report, I believe that the geologic and hydrogeologic interpretations made herein are reasonable and accurate.



Alexander J. Strohl, PG
Senior Staff Geologist



February 6, 2023

Date

1 Introduction

Terraphase Engineering, Inc. (Terraphase) has prepared this *Site Characterization Report* (Report), on behalf of Philadelphia Energy Solutions Refining and Marketing LLC (PESRM), to detail the results of the Site Assessment and Site Characterization activities at Tank Group 04 (the Site) which is located within the Former Philadelphia Energy Solutions refinery facility (Facility). The Facility, which is undergoing closure activities in preparation for redevelopment, is located at 3144 West Passyunk Avenue, Philadelphia, Pennsylvania (**Figure 1**). Remediation activities are being conducted at the Facility under the Pennsylvania Land Recycling and Environmental Remediation Standards Act (Act 2) by both PESRM and Evergreen Resources Group, LLC (Evergreen)¹ in accordance with the 2012 Buyer-Seller Agreement and the 2020 First Amendment to that Agreement.

The Site Assessment and Site Characterization activities described in this Report were performed in accordance with the applicable provisions of The Storage Tank and Spill Prevention Act (Act 32), Title 25 of the Pennsylvania Code (25 PA Code) Chapter 245 (Subchapter D), and Terraphase’s (2021) *Aboveground Storage Tank Closure Work Plan* (Work Plan), which was approved by the Pennsylvania Department of Environmental Protection (PADEP) on April 23, 2021. As discussed in the Work Plan, closure of the above ground storage tanks (ASTs) under Act 32 is being pursued through a group closure process, in which ASTs in the same general area (e.g., tank farm) have been demolished, removed, investigated, and evaluated at about the same time. Demolition of the tanks has been proceeding in phases from the north to the south with eight Tank Groups in all.

Tank Group 04 (**Figure 2**) is located within a larger area of the Facility referred to as the Point Breeze Refinery South Yard (South Yard). Evergreen is currently engaged in characterization and remediation work at the Facility under the Pennsylvania One Cleanup Program under the oversight of the PADEP and the United States Environmental Protection Agency (USEPA) (eFACTS PF No. 778374 and 778376). In its associated documentation, Evergreen has identified the Tank Group 04 portions of the South Yard as Area of Interest (AOI) 4. The specific ASTs addressed in this Report are shown on **Figure 3** and listed in **Table 1**.

This Report was prepared in accordance with Act 32 and 25 PA Code Chapter 245 (Subchapter D) and provides a summary of the Site Assessment and Site Characterization activities that were performed following the identification of potential releases to the environment during the demolition and removal of the Tank Group 04 ASTs. It also demonstrates that adequate characterization has been performed to evaluate whether remedial action is warranted and indicates that PESRM will pursue closure under the Site-Specific Standard (SSS).

Section 2 provides the site setting and includes a description of the Site and operational/usage history of the ASTs and information regarding site topography, geology, and hydrogeology. Section 3 includes a

¹ Evergreen Resources Management Operations, a series of Evergreen Resources Group, LLC, is managing the legacy remedial work for Philadelphia Refinery Operations, a series of Evergreen Resources Group, LLC (“Evergreen”) and Sunoco (R&M), LLC. For clarity, Sunoco, Inc. n/k/a ETC Sunoco Holdings LLC, Sunoco, Inc. (R&M) f/k/a Sunoco (R&M), LLC n/k/a Energy Transfer (R&M), LLC effective 4/19/2021 and Evergreen shall be referred to collectively as “Evergreen” in this Report.



summary of current and reasonably anticipated future land and groundwater use at and in the vicinity of the Site and the selected standards. Section 4 includes a summary of known past releases to the environment in the area and subsequent investigation and remedial activities to address these releases. Section 5 discusses the tank infrastructure and removal. Sections 6 and 7 discuss the Site Assessment and Site Characterization, respectively. Section 8 presents a summary of the Risk Assessment conclusions performed for the Tank Group. An Ecological Screening Evaluation is presented in Section 9. A summary of the Site Characterization Report and its conclusions are presented in Section 10.



2 Site Setting

The Facility, a former 1,300-acre refinery, is currently undergoing decommissioning to support redevelopment. The Site² is 70.6 acres in size and is located within the Point Breeze South Yard, an area that is also referred to as AOI 4 by Evergreen as part of their One Cleanup Program effort. The Site is located south of Hartranft Street and north of Penrose Avenue, between South 26th Street and Schuylkill Avenue. The Tank Group 04 area formerly consisted of a large tank farm with large piping structures, a pump house, and plant access roadways. Except for the asphalt roadways that pass through portions of Tank Group 04, and the tank foundations themselves, the area is not covered by hardscape.

The ASTs addressed in this Report are listed in **Table 1**. Sixteen other ASTs, not subject to this closure effort, were previously located within Tank Group 04.

Figure 3 provides a layout of Tank Group 04.

2.1 Operational History/Usage of the Tanks

The Facility operated as a petroleum refinery between 1860 and 2019. The refinery ceased operations in 2019. The demolition and decommissioning of the subject ASTs began in May 2021. Prior to demolition, the primary products held within these tanks were: Crude (PB 826, PB 840, PB 841, PB 843, PB 847, PB 881, PB 882, PB 883, PB 884, PB 885, and PB 886), Recovered Oil (PB 191), and Light Cycle Oil (PB 848). Additional details regarding the size, contents, and construction of the tanks are provided in **Table 1**.

2.2 Topography

Topography at the Site is generally flat except for containment berms constructed around the tank areas to provide containment in the event of a release. Regional topography slopes gently to the west towards the Schuylkill River, the nearest water body to the Site. The ground surface elevation at the Site is approximately 15 feet (ft) above mean sea level³.

2.3 Regional Geology and Hydrogeology

The Facility is located within the Atlantic Coastal Plain Physiographic Province of Pennsylvania. The Atlantic Coastal Plain is a physiographic province that is defined as having a flat topography, underlain by unconsolidated sediments that thicken to the southeast. The Coastal Plain deposits are sand, gravel, silt, and clay which drape over crystalline igneous and metamorphic rocks. In general, the resulting sediments are approximately 250 ft thick along the Delaware River. These sediments unconformably overlie much older, very complexly deformed rocks of the Piedmont physiographic province. The Coastal Plain deposits in the vicinity of the Facility consist of anthropogenic fill underlain by quaternary deposits.

² Tank Group 04 consists of the tank farm referred to by the Facility as the No. 4 Tank Farm.

³ North American Vertical Datum of 1988.



Much of the Facility and surrounding area is underlain by historical fill material, which was placed for the purpose of reclaiming lowlands along the banks of the tidal Delaware and Schuylkill Rivers during industrialization. Below the fill material, sediments consist of gray, muddy deposits with occasional sand, gravel, and organic-rich lenses. These sediments were deposited in floodplain, channel, and marsh environments through the Holocene. The most recent deposits are poorly consolidated and below the phreatic surface of the unconfined aquifer as a result of their relatively young geologic age and position along the Schuylkill River (tributaries and creeks). Below the Holocene deposits is a Pleistocene glacial outwash deposit, commonly referred to as the “Trenton Gravel” along the Delaware River valley. Cretaceous-age sand and clay units making up the Potomac-Raritan-Magothy aquifer system underly the Pleistocene deposits.

The sedimentary record near the Site consists of a complex series of water-bearing sand units which can comprise one or more hydrostatic units. Previous investigations conducted at the Facility have identified two saturated zones, including an unconfined shallow groundwater unit (occurring within the Holocene and Trenton Gravel deposits) and a deep groundwater unit known as the Farrington Sand, which is part of the Potomac-Raritan-Magothy aquifer system. The deeper groundwater unit is separated by a clay unit; as such, the deeper groundwater has been classified as a semi-confined aquifer. Groundwater is first encountered generally at the Facility at a depth approximately 13 to 23 ft below ground surface (bgs). **Appendix A** provides select figures from the *Remedial Investigation Report, Area of Interest 4* (AOI 4 RIR; Stantec 2017b) and the *Sitewide Fate and Transport Remedial Investigation Report* (Sitewide Fate and Transport RIR, Stantec 2022) for reference including, Figures 2-6, 2-7, and 2-8 From the AOI 4 RIR which provide a detailed cross section of the subsurface in this area.

2.4 Local Geology and Hydrogeology

During the Site Assessment and Site Characterization, soil at the Site was primarily investigated within the upper 5 ft, although certain Site Characterization borings were advanced to a maximum depth of 15 ft bgs. Monitoring wells were installed to depths of up to 20 ft bgs. Anthropogenic fill up to 11 ft thick was observed in soil cores collected from most of the soil borings installed in Tank Group 04. Soil beneath the fill layer generally consists of brown to brownish red gravelly sand, clay, and silt.

Historically, unconfined aquifer groundwater has been first encountered in Tank Group 04 at a depth of approximately 12 to 25 ft bgs (Stantec 2017b). During site characterization activities, groundwater was encountered between approximately 13 and 24 ft bgs. Perched groundwater has also been noted to be present in the anthropogenic fill layers throughout the Facility, causing mounding and irregular depressions (Stantec 2017b).

Groundwater at the refinery has historically been interpreted to flow to the south toward the convergence of the Delaware and Schuylkill Rivers. Based on Figure 5-4 of the AOI 4 RIR (Stantec 2017b) and Figure 3-29 of the Sitewide Fate and Transport RIR (Stantec 2022) included in **Appendix A**, unconfined aquifer groundwater flow within Tank Group 04 has been interpreted to be locally divided, with groundwater in the southern portion of the Tank Group flowing south, and groundwater in the central portion flowing to depressions in the northern portions of the Tank Group.



3 Selection of Standards

This section discusses the selection of remediation standards by PESRM for Tank Group 04. Related, this section also discusses planned land and groundwater use at the Site and describes derivation of risk-based screening levels (RBSLs) that are used to streamline investigation decisions during the Site Characterization.

3.1 Land and Groundwater Use

As noted in the parcel map included in **Appendix B** and as captured in the conceptual imagery developed by Hilco Redevelopment Partners (<https://www.thebellwetherdistrict.com/>), the area encompassing Tank Group 04 is being redeveloped into a state-of-the-art, multimodal industrial park and life sciences campus with ancillary rail infrastructure, energy infrastructure, marine capabilities, and commercial uses. Current and reasonably anticipated future land use in the area of Tank Group 04 is non-residential. Following redevelopment, much of the area is also expected to be covered by hardscape (e.g., building pads, drive aisles, parking lots, roadways) or other features that will function as barriers to direct contact exposure.

As discussed with PADEP, vapor intrusion is not considered in evaluating the adequacy of sampling performed during Site Characterization. However, the risk assessment described in Section 8 has evaluated the existing Site Assessment and Site Characterization data with consideration for current and reasonably expected future exposure scenarios (including vapor intrusion) and has identified areas of the Tank Group where site-related conditions could pose an unacceptable risk that would warrant risk management action (i.e., remediation, establishment of institutional or engineering controls). Once redevelopment plans have been finalized, additional investigation and/or evaluation of vapor intrusion exposure will be conducted to further evaluate whether conditions could pose an unacceptable risk to future building occupants such that risk management action (e.g., remediation, vapor mitigation) is warranted. PESRM will conduct this additional VI evaluation outside of this tank closure work. The VI evaluation should not delay regulatory closure of the tanks. PESRM has an obligation to evaluate or mitigate the vapor intrusion pathway under the 2020 Buyer-Seller Agreement Amendment.

The unconfined aquifer is not used for a municipal or nearby communal potable water supply and future potable use of the unconfined aquifer is not reasonably expected, as documented by Evergreen (*Stantec 2021 AOI 9 Second Remedial Investigation Report Addendum* and *Evergreen 2021 Public Involvement Remedial Investigation Report Response Letter to PADEP*). While the risk assessment does not consider current off-facility groundwater to be a source of nonpotable water based upon the results of Evergreen's (2021) assessments, the risk assessment does assume that off-facility groundwater could be used in the future as a source of nonpotable water.

3.2 Selected Standard

PESRM has selected the SSS to attain closure for Tank Group 04. As described in Section 6, the comparison of the Site Assessment data against Non-Residential Statewide Health Standard (SHS) Medium Specific Concentrations (MSCs), in accordance with PADEP's (2022) *Site Assessment Sampling*



Requirements at Regulated Storage Tank System Closures and the Work Plan, was used to identify whether releases could have occurred from the ASTs in Tank Group 04. PESRM subsequently elected to seek closure of the tanks under the SSS. To support attainment of the SSS, a Site-Specific Human Health Risk Assessment (the Risk Assessment) has been conducted to evaluate the potential significance of identified releases in Tank Group 04 and determine whether constituent of potential concern (COPC) concentrations could pose unacceptable risk and/or hazard to human health, and whether such conditions would warrant management via remedial action to demonstrate attainment of the SSS. The outcome of the Risk Assessment is presented in Section 8 and described in detail in **Appendix C**.

3.3 Derivation of Risk-Based Screening Levels

As part of this Report, RBSLs were derived in accordance with PADEP and USEPA risk assessment guidance and are summarized in **Table 2**. The RBSLs were used to help to segregate soil and groundwater sampling data into those that indicate a higher potential for health significance from those that indicate a lower potential. In addition, COPC concentrations have been delineated to the site specific RBSLs. This delineation indicates that the Site has been adequately characterized for a site-specific risk assessment.

The RBSLs are developed with consideration for current and reasonably expected future land and groundwater use at and in the immediate vicinity of the Facility.

RBSLs are developed for the following exposure scenarios:⁴

Soil Exposure

- Routine worker exposure to COPCs in soil via direct contact⁵ and vapor intrusion
- Construction worker exposure to COPCs in soil via direct contact
- Migration of COPCs in soil to groundwater⁶

Groundwater Exposure

- Routine worker exposure to COPCs in groundwater via volatilization to outdoor air and vapor intrusion
- Construction worker exposure to COPCs in groundwater via direct contact
- Off-site resident exposure to COPCs in groundwater via vapor intrusion
- Exposure of all receptors to COPCs in groundwater via nonpotable groundwater use
- Migration of COPCs in groundwater to surface water

⁴ Exposure to COPCs in soil and groundwater by hypothetical future residents was not evaluated because residential use is not a current or reasonably expected future use and because residential use is prohibited at the Property by multiple mechanisms.

⁵ Includes incidental ingestion and dermal contact with COPCs in soil and inhalation of COPCs in soil-derived vapor and particulates.

⁶ Uses groundwater RBSL as target groundwater concentrations.



RBSLs are calculated for each of the COPCs that have been included in the soil and groundwater sampling performed by PESRM. A list of these COPCs is provided in **Table 2**.

The general assumptions used in the derivation of the RBSLs are summarized in the Risk Assessment (**Appendix B of Appendix C**). Human health-based RBSLs are calculated at a target cancer risk level of 1×10^{-5} and a target noncancer hazard quotient of 0.1. The target cancer risk level and target noncancer hazard quotient are used with consideration for the risk management goals established in Section 250.402(b) for attainment of the Site-Specific Standard (i.e., a cumulative excess cancer risk greater than 1×10^{-4} and a noncancer hazard index greater than 1⁷). For efficiency, the RBSLs are developed in a manner that allows them to be used site-wide to complete Site Characterization at each area (e.g., Tank Group).

The RBSLs are not cleanup standards. The identification of concentrations greater than RBSLs does not, on its own, indicate that an unacceptable risk to human health exists. Rather, concentrations greater than RBSLs indicate that additional evaluation is warranted to (1) determine if interim measures are necessary to abate an imminent hazard; (2) determine whether additional site characterization is needed to confirm the sources of contamination, identify the regulated substances involved and the extent of migration of those regulated substances in environmental media, and evaluate the fate and transport of these substances, if needed; (3) perform a site-specific risk assessment, if desired; and (4) as needed, provide sufficient information to allow for the development of a remedial action plan or remedy design.

⁷ As estimated from exposure to COPCs with the same target organ or target effect.



4 Known Past Releases to the Environment

The presence of constituents in soil above the RBSLs in the Tank Group 04 area may be associated with releases from ASTs or other potential sources unrelated to the ASTs. These releases include those identified historically (prior to Tank Group 04 Site Assessment and Site Characterization activities) by Evergreen or those identified recently but unrelated to tanks in Tank Group 04 by PESRM. This section provides a discussion of the past releases and potential other sources of contamination.

The AOI 4 RIR (Stantec 2017b), prepared on behalf of Evergreen, notes historical investigations relating to past releases of petroleum products in the vicinity of Tank Group 04. In some cases, these releases have resulted in contamination of groundwater (including the identification of light non-aqueous phase liquid [LNAPL]) that is present or that has migrated to within the bounds of Tank Group 04.

The AOI 4 RIR identified nine historical releases from ASTs within Tank Group 04 (Incident Nos. 6229 [PB 843], 6227 [PB 846], 35654 [PB 881], 37051 [PB 847], 37107 [PB 885], 38093 [PB 848], 38094 [PB 252], 45998 [PB 844], and 6226 [PB 842]). The *Site Characterization Report/Remedial Action Completion Report, for Aboveground Storage Tanks PB 843, PB 846, PB 881, PB 847, PB 885, PB 848, PB 252, PB 844, PB 823, PB 842, and PB 253* (Stantec 2017a) was submitted for these historical releases, allowing for them to be addressed under Act 2. PADEP approved the AOI 4 RIR (Stantec 2017b) following the completion of an addendum in 2021. These release incidents will be closed following the approval of an Act 2 Final Report.

Three additional releases have been reported by Evergreen in the AOI 4 RIR (Stantec 2017b) in the vicinity of the 15 Pump House, but soil sampling investigations have not identified residual contamination in the area.

In addition to the historical releases identified above, two additional releases within Tank Group 04, unrelated to releases from regulated storage tank systems, are being investigated by PESRM under Act 2. The PB 881 Dike Roadway release occurred during the removal of overhead pipelines within the pipe rack located along the dike roadway west of the PB 881 tank dike. PESRM has submitted an NIR for this release under Act 2. A release located south of the 870 unit was identified by Evergreen in 2019 during routine gauging activities supporting an Act 2 investigation in the area. The release was identified by an increase in LNAPL thickness in wells in the north central portion of Tank Group 04. PESRM plans to investigate this release in accordance with its obligations under the 2012 Buyer-Seller Agreement. These releases are not being investigated as part of this SCR, but rather provide the entirety of the known contamination potentially in place that is considered unrelated to the Site Assessment and Site Characterization of the tanks in Tank Group 04.

4.1 Pre-existing Contamination

Environmental sampling has been conducted at the Facility since as early as 1988. This section provides a summary of historical sampling results in and around Tank Group 04 and a comparison to RBSLs.



4.1.1 Soil

Historical sampling (prior to PESRM Site Assessment activities) in Tank Group 04 has included soil samples which have been analyzed for specific volatile organic compounds (VOCs), semi-volatile organic compounds, and metals. As discussed in Section 1.5 of the AOI 4 RIRs, the list of constituents of concern which are included in sampling performed by Evergreen as part of the site-wide approach for the Facility under the One Cleanup Program, are referred to as the Evergreen Petroleum Short List and Comprehensive List. The Comprehensive List, which encompasses the Petroleum Short List, is shown on **Table 3**.

As presented on **Table 4a**, the maximum detected concentrations of constituents in historical samples were compared to the RBSLs derived by Terraphase. An evaluation of the concentrations of constituents in historical samples compared to the RBSLs indicates the following:

- Lead and naphthalene have been detected historically in soil in the area at concentrations greater than the Routine Worker Direct Contact RBSLs.
- Benzene, 1,2,4-trimethylbenzene (1,2,4-TMB), xylenes (total), naphthalene, and lead have been detected historically in soil in the area at concentrations greater than the Construction Worker Direct Contact RBSLs.
- Lead and naphthalene have been detected historically in soil in the area at concentrations greater than the soil Migration to Groundwater RBSLs.

Table 4a summarizes additional information for these historical soil sampling results including number of detections, range of detected concentrations, and ratios of the maximum detected concentrations to the RBSLs. **Figure 4a** presents the spatial distribution of historical soil concentrations above these RBSLs. **Appendix D** provides tables of these historical soil sampling results.

Historical sampling has identified concentrations of constituents exceeding RBSLs in soil in the vicinity of previously closed tanks PB 844 (naphthalene), PB 846 (naphthalene), and PB 252 (benzene, lead, naphthalene, xylenes (total), and 1,2,4-TMB). In addition, historical sampling identified concentrations of constituents near currently assessed tanks PB 881 (naphthalene), PB 885 (naphthalene and xylenes (total)), and PB 848 (benzene and lead).

In 2018, Evergreen conducted three limited soil excavations in the vicinity of tanks PB 848 and PB 252 (Stantec 2018). The excavations were conducted to remove soil known to be impacted with lead. Post excavation samples were collected and indicated that soil had been remediated to Evergreen's applicable standards for lead. The post excavation soil sample results are presented relative to RBSLs on **Figure 4a** and **Table 4a**.

With consideration for the closure of the Tank Group 04 ASTs, these sampling results have been included in evaluating whether the soil sampling data generated during the Site Assessment and Site Characterization indicate evidence of new releases to the environment from the tanks, or whether the nature and extent of contamination identified during the Site Assessment and Site Characterization is consistent with known historical soil quality.



4.1.2 Groundwater

More than 30 groundwater monitoring or recovery wells have been installed within and near Tank Group 04 as part of historical environmental sampling at the Facility. **Table 4b** summarizes additional information for these historical groundwater sampling results including number of detections, range of detected concentrations, and ratios of the maximum detected concentrations to the RBSLs. As discussed in the AOI 4 and the Sitewide Fate and Transport (Stantec 2022) RIRs, of the list of site-related constituents identified in groundwater, benzene and methyl tert-butyl ether (MTBE) were chosen as the primary chemicals (qualitative proxies) for other constituents because of their water solubility, potential to be mobile in groundwater, and their persistence in groundwater at and near the Facility.

MTBE was phased out of use in the early 2000s and as of 2005, MTBE has not been used in significant quantities as an additive to gasoline. As a result, the presence of MTBE in soil and groundwater can help to identify contamination that is associated with historical releases (e.g., pre-2007).

Figure 4b depicts the wells in Tank Group 04 with identified historical (prior to PESRM Site Characterization activities) dissolved phase groundwater contamination at concentrations greater than RBSLs and/or LNAPL. Figures from the AOI 4 RIR show the distribution of benzene and other constituents in groundwater near Tank Group 04. For expediency, copies of Figures 6-1, and 10-1 through 10-7 of the AOI 4 RIR are included as **Appendix A**. Each has been amended to identify the location of Tank Group 04.

As shown on Figures 10-1 through 10-6 of the AOI 4 RIR, a dissolved-phase contamination plume exists beneath the western and central portion of Tank Group 04. As presented in **Appendix A**, as a result of remedial action and natural attenuation, the concentrations of benzene and MTBE and the aerial extent of elevated concentrations in unconfined groundwater below Tank Group 04 have decreased since 2004/2005.

Since as early as 1995, LNAPL plumes have also been identified at and near Tank Group 04. Conservative estimations of LNAPL plume extent from 2013-2016 are shown on Figure 6-1 of the AOI 4 RIR. For mapping purposes, LNAPL has been generally characterized into the following categories: light, middle, and heavy petroleum distillates.

As part of remedial action, four LNAPL recovery systems have been installed by Evergreen/Sunoco in the vicinity of Tank Group 04. The Penrose System was operated until March 2020 along the southern boundary of Tank Group 04. The system was a total fluids recovery system implemented to extract impacted groundwater and LNAPL from a series of recovery wells. The system discharged recovered LNAPL to a holding tank and recovered groundwater to a nearby municipal sewer line.

The S-30, S-36, and RW-2 remediation systems were located along the western boundary of Tank Group 04 and were designed to recover localized LNAPL through recovery pumps. All three systems were shut down between 2009 and 2010. The S-30 remediation system was re-activated in 2018 following rehabilitation but was shut down again in September 2021 in advance of planned demolition activities in the area.

Historically, petroleum-related constituents have not been identified at concentrations greater than the RBSLs in lower aquifer monitoring wells in the vicinity of Tank Group 04.



These historical sampling results have been considered in evaluating Site Assessment and Site Characterization data for Tank Group 04.



5 Tank Infrastructure and Removal

In accordance with the Work Plan, Northstar Contracting Group, Inc. and its subcontractors, JD2 Environmental, Inc. and AST Construction, Inc. – PADEP-certified Aboveground Field Constructed Storage Tank System Removal contractors, were retained by PESRM to perform tank demolition and handling, including (1) hazard recognition and abatement; (2) removal and handling of vapors, product, wastewaters, and accumulated sludges; (3) overseeing or verifying cleaning of the storage tank system; (4) dismantling the AST; and (5) removal of ancillary equipment and piping.

The demolition of the following ASTs began in May 2021 and was completed in March 2022:

- PB 881 (PADEP No. 011A)
- PB 886 (PADEP No. 012A)
- PB 191 (PADEP No. 040A)
- PB 826 (PADEP No. 049A)
- PB 840 (PADEP No. 053A)
- PB 841 (PADEP No. 054A)
- PB 847 (PADEP No. 055A)
- PB 882 (PADEP No. 056A)
- PB 883 (PADEP No. 057A)
- PB 884 (PADEP No. 058A)
- PB 885 (PADEP No. 059A)
- PB 843 (PADEP No. 086A)
- PB 848 (PADEP No. 088A)

During the removal, it was determined that all 13 tanks, PB 191, PB 826, PB 840, PB 841, PB 843, PB 847, PB 848, PB 881, PB 882, PB 883, PB 884, PB 885, and PB 886, had double bottoms. Double bottoms are forms of secondary containment located under the tanks that allow for visual inspection and potential repair to any observed leaks. PESRM retained ENTACT to remove the double bottoms at the 13 tanks. Removal was completed in July 2022.

On behalf of PESRM, JD2 Environmental, Inc. submitted to PADEP the required tank registration amendments, copies of which are provided as **Appendix E**.

The Aboveground Storage Tank System Closure Report forms (2630-FM-BECB0514) are included as **Appendix F**.



6 Site Assessment

This section discusses the sample collection methods used and sample analyses performed during the Site Assessment. The soil sampling was completed by Ransom Consulting, LLC and their subcontractor TPI Environmental, LLC (TPI).

As discussed in the Work Plan, when no evidence of a release to the environment was identified during Tank Group 04 AST removal, ASTs were subject to Site Assessment sampling using a grid-based approach with additional samples biased toward the locations of pipe connections or other key infrastructure. Sampling was conducted during multiple mobilizations as the tanks were being demolished and the ground became available for sampling. The first mobilization was on July 29, 2021, and the last mobilization was completed on July 15, 2022, after the removal of double bottoms.

In total, 250 soil borings were installed and 263 soil samples were collected during the Site Assessment. **Figure 5a** shows the location of each of the Site Assessment soil borings.

6.1.1 Sample Collection Methods

Prior to the initiation of the sampling activities, the Pennsylvania One Call System (811 Dig Safe) was contacted to identify underground utilities at the Site. In addition, a review of available information provided by facility representatives regarding the presence/absence of underground utilities was used in the selection of sampling locations. Finally, a private locate was performed using geophysical and electromagnetic techniques to identify potential utilities or subsurface structures at proposed drilling locations.

Soil borings were completed using direct-push (i.e., Geoprobe) drilling or hand auger methods and advanced through the top 5 ft of soil. Continuous soil cores were collected, and field screened using a photoionization detector (PID) to identify potentially impacted zones. Soil sampling intervals were selected based on the results of field screening (i.e., staining, odors, and elevated PID readings). Where potentially impacted materials were not encountered, discrete samples were collected at a depth of 3.0-3.5 ft bgs consistent with the Confirmatory Sampling Protocol detailed in PADEP's (2017) *Closure Requirements for Aboveground Storage Tank Systems*. The approach is consistent with PADEP guidance as their language requires sampling "**at least one foot below underground product piping, two feet below product dispensers, remote fills or containment structures and aboveground product lines for ASTs, and three feet below the tank.**" Where fill was observed, samples of the fill were collected if it consisted of soil or soil-like material. Groundwater was not encountered during the Site Assessment.

Appendix G provides copies of the boring logs that describe the soil cores.

6.1.2 Sample Analyses

The analysis selected for each soil sample was based on the AST contents as prescribed by PADEP's Short List of Petroleum Products inventory (Table III-5 of the *Land Recycling Program Technical Guidance Manual* [January 2019]). As shown on **Table 1**, for these 13 ASTs, analytes included one or a combination of the following short lists, based on historical tank contents:



- **Short List 1.** *Leaded Gasoline, Aviation Gasoline and Jet Fuel:* benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-TMB, 1,3,5-TMB, 1,2-dichloroethane, 1,2-dibromoethane, and lead.
- **Short List 2.** *Unleaded Gasoline:* benzene, toluene, ethyl benzene, xylenes (total), cumene, MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-trimethyl benzene (1,3,5-TMB).
- **Short List 3.** *Kerosene, Fuel Oil No. 1:* benzene, toluene, ethyl benzene, cumene, MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- **Short List 4.** *Diesel Fuel and Fuel Oil No. 2:* benzene, toluene, ethyl benzene, cumene, MTBE, naphthalene, 1,2,4-TMB, and 1,3,5-TMB.
- **Short List 5.** *Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids:* benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene (B[a]A), chrysene, benzo(b)fluoranthene (B[b]F), benzo(a)pyrene (B[a]P), and benzo(g,h,i)perylene.
- **Short List 6.** *Waste Oil:* benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)pyrene, and lead.

VOCs were analyzed via USEPA Method 8260B. Samples for semi-volatile organic compounds were analyzed via Method 8270C. Samples for lead were analyzed via USEPA Method 6010B.

Laboratory analytical services were provided by Alpha Analytical, Inc. of Westborough, Massachusetts, which is a PADEP-certified laboratory. Soil samples submitted for analyses were placed directly into laboratory provided glassware and stored on ice in a cooler under appropriate chain of custody protocol.

6.1.3 Sample Results

Soil sampling results from the Site Assessment were compared to the following Non-residential SHS MSCs⁸ to help identify potential releases to the environment from the ASTs and their associated piping:

- Non-Res Soil Direct Contact MSCs for soil
- Non-Res Used Aquifer Soil-to-Groundwater MSCs

Table 5 identifies the Site Assessment sampling locations where constituents were identified at concentrations greater than the applicable MSCs. Site Assessment results were screened against Non-Residential SHS MSCs, as detailed in the Work Plan. This screening evaluation was conducted to determine if releases could have occurred from the regulated storage tank system being assessed. If

⁸ As described in Section 5.1.1, soil sampling intervals were based on the results of field screening (i.e., staining, odors, and elevated PID readings). Where potentially impacted materials were not encountered, discrete samples were collected from native soil at a depth of 3.0-3.5 ft bgs, in accordance with PADEP's (2017) *Closure Requirements for Aboveground Storage Tank Systems*. Since only subsurface (> 2 ft bgs) soil samples were collected from some locations during the Site Assessment, the comparison of the resulting concentrations to MSCs conservatively disregarded the surface/subsurface soil designation reflected in the Non-residential Soil DC MSCs (i.e., results were compared to the Non-Res DC MSCs for surface soil). This approach was used to evaluate potential releases from tanks within Tank Group 04.



concentrations exceeding the MSCs are identified, it is assumed that a release has occurred from the associated storage tank system, and the release was reported to the PADEP.

Two constituents were identified in soil at concentrations greater than these applicable MSCs (i.e., benzene and lead).

PB 191

None of the Site Assessment soil samples collected in proximity to PB 191 exhibited concentrations greater than the applicable MSCs.

PB 826

None of the Site Assessment soil samples collected in proximity to PB 826 exhibited concentrations greater than the applicable MSCs.

PB 840

One sample (PB-840-09-SS01) collected in proximity to PB 840 and its associated piping exhibited concentrations greater than one or more applicable MSCs. The constituent identified is benzene.

PB 841

None of the Site Assessment soil samples collected in proximity to PB 841 exhibited concentrations greater than the applicable MSCs.

PB 843

None of the Site Assessment soil samples collected in proximity to PB 843 exhibited concentrations greater than the applicable MSCs.

PB 847

None of the Site Assessment soil samples collected in proximity to PB 847 exhibited concentrations greater than the applicable MSCs.

PB 848

Seven samples (PB-848-04-SS01, PB-848-07-SS01, PB-848-09-SS01, PB-848-10-SS01, PB-848-11-SS01, PB-848-15-SS01, and PB-848-17-SS01) collected in proximity to PB 848 and its associated piping exhibited concentrations greater than one or more applicable MSCs. The constituents identified are benzene and lead.

PB 881

None of the Site Assessment soil samples collected in proximity to PB 881 exhibited concentrations greater than the applicable MSCs.

PB 882

None of the Site Assessment soil samples collected in proximity to PB 882 exhibited concentrations greater than the applicable MSCs.



PB 883

None of the Site Assessment soil samples collected in proximity to PB 883 exhibited concentrations greater than the applicable MSCs.

PB 884

Three samples (PB-884-09-SS01, PB-884-15-SS01, and PB-884-25-SS01) collected in proximity to PB 884 and its associated piping exhibited concentrations greater than one or more applicable MSCs. The constituent identified is benzene.

PB 885

None of the Site Assessment soil samples collected in proximity to PB 885 exhibited concentrations greater than the applicable MSCs.

PB 886

None of the Site Assessment soil samples collected in proximity to PB 886 exhibited concentrations greater than the applicable MSCs.

Based upon the results, no evidence of a release from PB 191, PB 826, PB 841, PB 843, PB 847, PB 881, PB 882, PB 883, PB 885, and PB 886 was identified. The Site Assessment outcome for PB 191, PB 826, PB 841, PB 843, PB 847, PB 881, PB 882, PB 883, PB 885, and PB 886 is “No Obvious Contamination – Sample Results Meet Action Levels”.

Based upon the results of soil samples collected during the Site Assessment and a comparison to generic MSCs, potential releases of regulated substances to the environment from PB 840, PB 848, and PB 884 were identified. The Site Assessment outcome category for these ASTs is “No Obvious Contamination – Sample Results Do Not Meet Action Levels”.

The identification of concentrations in soil above applicable MSCs resulted in notifying PADEP of a release to the environment on August 10, 2022. PADEP assigned the releases in Tank Group 04 to Incident No. 57976. Copies of the notification documents are included in **Appendix H**.

Following the identification of releases in Tank Group 04, PESRM elected to seek closure of the tanks under the SSS. Site Assessment results were subsequently screened against the RBSLs. **Table 6** lists the COPCs (if any) identified in soil at concentrations greater than the RBSLs in the vicinity of each tank in Tank Group 04 during Site Assessment and Site Characterization soil sampling. The spatial distribution of the COPCs identified during the Site Assessment and their concentrations relative to RBSLs are shown on **Figure 6**. **Appendix I** provides the soil analytical results from the Site Assessment. Copies of the laboratory reports are included as **Appendix J**.



7 Site Characterization

Based on the results of Site Assessment sampling in Tank Group 04 (Section 6), a Site Characterization plan was developed. The objective of the Site Characterization was to delineate the horizontal and vertical extent of the potential releases until sufficient data were available to determine the need for interim or remedial measures via a site-specific risk assessment.

This section discusses how the Site Characterization plan was developed, the methods used during the sampling, and the evaluation of the results following characterization.

PESRM's Site Characterization plan for Tank Group 04 included the installation of an additional three soil borings and the collection of four additional soil samples. In addition, the plan included the installation of three groundwater monitoring wells with two ensuing groundwater sampling events.

7.1 Site Characterization Soil Sampling

The Site Characterization scope for soil included the installation of an additional three soil borings and the collection of four additional soil samples. The samples were collected at deeper soil intervals (e.g., 6-6.5 ft bgs, 7-7.5 ft bgs, 10-10.5 ft bgs, and 17-17.5 ft bgs) to vertically characterize the extent of COPCs concentrations in soil, as required by 25 PA Code § 245.309(c)(9). The sample collection protocols, and the sampling analyses used during the Site Characterization were consistent with those used during the Site Assessment. The sampling was completed by Terraphase and TPI in conjunction with monitoring well installation activities. The Site Characterization soil sample locations are depicted on **Figure 5b**.

Releases to soil from the ASTs and associated soil contamination would be confined to the secondary containment berms. As a result, the horizontal extent of soil contamination associated with the ASTs is limited to an extent no greater than the berms (except for where piping traverses through the berms). Where space existed between locations of identified soil contamination and the berms, horizontal step out sampling was considered to delineate soil contamination horizontally to within the bermed containment areas.

The Site Assessment sampling methodology included PID field screening of soil during the installation of the soil borings. This allowed the field team to identify the interval with the greatest potential VOC concentrations. If samples were collected at a depth greater than 0-0.5 ft bgs, it was either because PID readings were greater than those observed from 0-0.5 ft bgs, or PID readings indicated no evidence of VOCs and samples were then collected from 3.0-3.5 ft bgs per PADEP (2017). For these situations, shallow soil delineation sampling was unnecessary. Instead, the Site Characterization conservatively assumes that the concentrations observed in these subsurface samples also exist at the surface (i.e., 0-0.5 ft bgs). Samples were collected from the depth corresponding to the highest field screening indication of contamination between the Site Assessment sample depth and the water table. Historical soil sampling results were also used to help support Site Characterization decision-making.

Site Characterization soil sampling was conducted between December 19, 2022 and January 4, 2023. **Appendix G** contains copies of the boring logs that describe the soil cores.



7.2 Site Characterization Groundwater Sampling

In addition to soil characterization, groundwater monitoring wells were installed in the vicinity of tank PB 840, PB 848, and PB 884, as depicted in **Figure 5c**. The wells were installed to fully characterize the extent of contamination identified in the vicinity of the tanks, as required by 25 PA Code § 245.309(c)(10).

The locations of the monitoring wells were selected with three objectives in mind: (1) to evaluate groundwater in the vicinity of each tank with a reported release, (2) to bias monitoring well locations toward areas where higher concentrations have been detected in soil, and (3) to obtain spatial coverage across the Tank Group.

Terraphase and TPI installed the wells using 4 ½-inch direct push drill casing to 17 ft bgs (TG04-MW-02) or 20 ft bgs (TG04-MW-01 and TG04-MW-03). The monitoring wells were constructed with 10-feet of 2-inch diameter Schedule 40 PVC pre-packed well screens with 0.010-inch slotted screen. A #1 sand filter pack was installed to fill the remaining annular space around the pre-packed screen to 2-feet above the screened interval. A #00 fine sand seal was placed above the pack and the remaining annular space was filled with hydrated bentonite chips. Monitoring well construction logs are provided in **Appendix G**.

During installation of TG04-MW-02, a layer consistent with the upper clay unit was encountered. To prevent downward migration of contaminants from the overburden to the lower aquifer, drilling was stopped to avoid penetration of the upper clay unit. Monitoring well TG04-MW-02 was installed in the overburden above the upper clay unit, and since installation groundwater has not entered this well. Therefore, to supplement groundwater data in the vicinity of this well, Terraphase collected groundwater samples from a pre-existing unconfined aquifer monitoring well (i.e., S-219).

Well TG04-MW-03 was installed and developed on December 21, 2022. Well development was conducted by over pumping to remove multiple well volumes with a submersible pump. The submersible pump was surged up and down along the well screen to loosen sediment from the formation into the well. Well development continued until the developed water was clear and free of sediment.

Well TG04-MW-01 was installed on December 20, 2022, but could not be developed with consideration for health and safety protocols. After the monitoring well was constructed, vapors were observed emanating from the top of the well casing. PID readings sustained over 100 ppm in the breathing zone and Lower Explosive Limit (LEL) readings were 99-percent above the well head. The field team was instructed to stay away from the well and not purge the well based on the LEL readings. The well was left open to vent until a follow up attempt to develop the well was successful on January 4, 2023. The well was purged dry multiple times until produced water was clear of sediment.

Water produced by development of all wells was containerized and treated at the on-site wastewater treatment plant.

Prior to groundwater sample collection, Terraphase collected groundwater level and LNAPL thickness measurements from wells TG04-MW-01, TG04-MW-02 (dry), and TG04-MW-03, and existing monitoring wells S-102 (dry), S-216, S-415, S-365, S-281, S-121, S-122, S-219, S-381, S-371, and S-218 using an electronic oil/water interface probe. The results of the gauging are provided in **Table 7**. Groundwater



samples were collected from TG04-MW-01 and TG04-MW-03 as well as existing well S-219 (replacement for well TG04-MW-02).

Terraphase conducted a groundwater sampling event via low-flow groundwater sampling techniques. Sampling was conducted 2 weeks following well development of TG04-MW-03, on January 4, 2023, and 48 hours after development of TG04-MW-01, on January 6, 2023. S-219 was also sampled on January 6, 2023. A second round of sampling at these wells is planned for February 2023, the results of which will be presented and evaluated in a forthcoming Site Characterization Report addendum.

The groundwater samples collected from the wells were analyzed for Shortlist 1-6 parameters.

7.3 Site Characterization Results

Table 8 presents a comparison of the maximum detected COPC soil concentrations across the Site to the RBSLs and reflects both Site Assessment and Site Characterization sampling results. **Table 9** presents the groundwater sample results from the wells sampled during the January 2023 characterization event and compares the concentrations to the RBSLs.

With consideration for soil and groundwater, a comparison to RBSLs indicates the following:

Soil

- Routine Worker Direct Contact Exceedances: lead
- Construction Worker Direct Contact Exceedances: 1,2,4-TMB, xylenes, naphthalene, and lead
- Soil Migration to Groundwater Exceedances: none

Groundwater

- Resident Nonpotable Groundwater Use Exceedances: benzene
- Construction Worker Direct Contact Exceedances: none
- Groundwater Migration-to-Surface Water Exceedances: none

Figure 6 depicts the spatial distribution of the comprehensive soil sampling data (i.e., Historical, Site Assessment, and Site Characterization) that have been generated in Tank Group 04 relative to RBSLs.

Figures 7a through 7d show the spatial distribution of 1,2,4-TMB, xylenes, naphthalene, and lead relative to their respective RBSLs in soil. **Figure 8** presents the spatial distribution of Site Characterization groundwater data relative to RBSLs. **Figure 9** shows the spatial distribution of benzene relative to its RBSLs in groundwater.

Appendix I provides the comprehensive soil analytical results from the Site Assessment and Site Characterization. Laboratory reports are provided in **Appendix J**.

7.3.1 Soil Characterization Results

The results of soil sampling have indicated that COPCs have been adequately characterized with respect to the RBSLs. Delineation of COPCs in soil at concentrations above the RBSLs using soil sampling data or tank containment berms is detailed below.



1,2,4-TMB

As shown on **Table 8**, 1,2,4-TMB was detected in soil in the area at a concentration greater than the Construction Worker Direct Contact RBSL (70 milligrams per kilogram [mg/kg]). The concentrations in soil ranged from non-detect to 92 mg/kg.

Horizontal delineation of the 1,2,4-TMB concentration exceeding the RBSL at boring PB-840-09 (sampled from 4.5-5.0 ft bgs) is provided to the north and east by samples collected from borings PB-840-05 and PB-840-10, and to the south and west by the tank containment berms. Vertical delineation is provided by a deeper sample collected from boring PB-840-09 (sampled from 10.0-10.5 ft bgs).

Figure 7a provides an additional illustration of the spatial distribution of 1,2,4-TMB in soil relative to the applicable RBSLs. Tables with the soil analytical results are provided in **Appendix I**.

Xylenes (total)

As shown on **Table 8**, xylenes were detected in soil in the area at a concentration greater than the Construction Worker Direct Contact RBSL (51 mg/kg). The concentrations in soil ranged from non-detect to 200 mg/kg.

Horizontal delineation of the xylenes concentration exceeding the RBSL at boring PB-840-09 (sampled from 4.5-5.0 ft bgs) is provided to the north and east by samples collected from borings PB-840-05 and PB-840-10, and to the south and west by the tank containment berms. Vertical delineation is provided by a deeper sample collected from boring PB-840-09 (sampled from 10.0-10.5 ft bgs). **Figure 7b** provides an additional illustration of the spatial distribution of xylenes in soil relative to the applicable RBSLs. Tables with the soil analytical results are provided in **Appendix I**.

Naphthalene

As shown on **Table 8**, naphthalene was detected in soil in the area at a concentration greater than the Construction Worker Direct Contact RBSL (6 mg/kg). The concentrations in soil ranged from non-detect to 9.3 mg/kg.

Horizontal delineation of the naphthalene concentration exceeding the RBSL at boring PB-840-09 (sampled from 4.5-5.0 ft bgs) is provided to the north and east by samples collected from borings PB-840-05 and PB-840-10, and to the south and west by the tank containment berms. Vertical delineation is provided by a deeper sample collected from boring PB-840-09 (sampled from 10.0-10.5 ft bgs).

Horizontal delineation of the naphthalene concentrations exceeding the RBSL at boring PB-847-15 (sampled from 4.0-4.5 and 6.0-6.5 ft bgs) is provided to the north and east by samples collected from borings PB-847-10 and PB-840-16, and to the south and west by the tank containment berms. Vertical delineation is provided by a deeper sample collected from boring PB-847-15 (sampled from 17.0-17.5 ft bgs).

Figure 7c provides an additional illustration of the spatial distribution of naphthalene in soil relative to the applicable RBSLs. Tables with the soil analytical results are provided in **Appendix I**.



Lead

As shown on **Table 8**, lead was detected in soil in the area at a concentration greater than the Routine Worker Direct Contact (2,520 mg/kg) and Construction Worker Direct Contact RBSLs (2,520 mg/kg). The concentrations in soil ranged from non-detect to 3,200 mg/kg.

Horizontal delineation of the lead concentration exceeding the RBSL at boring PB-848-07 (sampled from 4.5-5.0 ft bgs) is provided to the by samples collected from borings PB-848-01, PB-848-08, PB-848-11, and PB-848-06. Vertical delineation is provided by a deeper sample collected from boring PB-848-07 (sampled from 7.0-7.5 ft bgs).

Figure 7d provides an additional illustration of the spatial distribution of lead in soil relative to the applicable RBSLs. Tables with the soil analytical results are provided in **Appendix I**.

7.3.2 Groundwater Characterization Results

Terraphase gauged 14 monitoring well locations in the vicinity of Tank Group 04 and measured the depth-to-water and depth-to-product from the top of inner casing (TOIC). The results of the gauging activities are presented in **Table 7**. LNAPL-corrected depth-to-water measurements and groundwater elevations are also presented in **Table 7**, and the interpreted potentiometric surface is shown in **Figure 10**. The groundwater flow direction in Tank Group 04 is interpreted to be locally divided, with groundwater in the southern portion of the Tank Group flowing south, and groundwater in the central portion flowing to depressions in the northern portions of the Tank Group. Also, during well gauging, measurable LNAPL was confirmed in two of the 14 monitoring wells (S-365 and S-281). The measured LNAPL thicknesses are presented in **Table 7**.

The results of groundwater sampling have indicated that COPCs have been adequately characterized with respect to the RBSLs. Delineation of COPCs in groundwater at concentrations above the RBSLs using groundwater sampling data is detailed below.

Benzene

As shown on **Table 9**, benzene was detected in groundwater in the area at a concentration greater than the Resident Nonpotable Groundwater Use RBSL (0.30 milligrams per liter). The concentrations in groundwater ranged from non-detect to 0.58 milligrams per liter.

Local groundwater flow in the vicinity of TG04-MW-01 is toward a groundwater depression to the southeast of the well. Horizontal delineation of the benzene concentration exceeding the RBSL at TG04-MW-01 in the downgradient direction is provided by groundwater samples collected by Evergreen from wells S-225, S-216, and MW-1.

The monitoring wells are shown on **Figure 9** and provide an illustration of the spatial distribution of benzene in groundwater relative to the applicable RBSLs. Tables with the groundwater analytical results are provided in **Appendix I**.



7.3.3 Vapor Intrusion

At this time, because there is no current vapor intrusion exposure in this area, and because future assessment will be conducted and exposure pathways will be mitigated as necessary, vapor intrusion exposure in the Tank Group 04 area is not a current or reasonably expected future exposure scenario and it was not considered in determining the need for additional Site Characterization sampling. However, Site Assessment and Site Characterization data were evaluated for potential future vapor intrusion exposure scenarios as part of the risk assessment in Section 8.

7.4 Data Quality Assurance, Quality Control, and Usability

While the Site Assessment and Characterization sampling data were not subject to formal data validation, elements were included to help assess data quality and usability of the results to support the project objectives. This included the collection of quality assurance/quality control samples, general quality control checks on the field and laboratory information, and an assessment of the impact of elevated reporting limits due to sample-specific interferences.

7.4.1 Quality Assurance/Quality Control Samples

During the Site Assessment/Characterization field activities, one trip blank sample per sample cooler and approximately 1 field blank per 10 soil samples was submitted to the analytical laboratory to evaluate potential cross-contamination during sample container shipment and storage. Results of the quality assurance and quality control sample analyses are provided in **Appendix I**. COPCs were not detected in blank samples at concentrations greater than the laboratory reporting limits. As such, there is no concern associated with laboratory cross-contamination and/or sampling-related cross-contamination for samples collected from the Site.

Approximately one field duplicate sample per every 20 soil samples was also collected to evaluate the variance in the sampling/analysis. Relative percent differences (RPDs) for duplicate pairs were calculated and ranged from 0 to 199 percent with an average of 56 percent. Overall, RPDs <50 percent generally represent the typical level of variability. Reasons for a higher RPD can include sample heterogeneity or samples with high concentrations. Given that the predominant soil type sampled is anthropogenic fill some additional variability is expected and reasonable.

7.4.2 General Quality Control Checks

General quality control checks were also performed on the field information and laboratory analytical deliverables. This included checking and reviewing laboratory logins and completed chains of custody, confirming that the requested analyte lists were reported, and that the sample nomenclature conformed to the proposed sampling scope of work. In some cases, multiple analyses were reported by the laboratory and a general review of elements such as surrogate recoveries, qualifiers, analytical limits, and laboratory narratives were performed to identify which results would be used for a given sample. A log of these general checks is provided in **Appendix I** along with the methodology used to select between multiple results when provided by the analytical laboratory.



8 Risk Assessment

The site-specific risk assessment report (**Appendix C**) was prepared to document the methodology and results of a site-specific human health risk assessment performed in accordance with 25 Pa. Code § 250.409, to support a demonstration that conditions at the Site meet the tank closure performance standard in accordance with the Storage Tank and Spill Prevention Act (Act 32).

Based on the review of the soil and groundwater concentrations in comparison to the RBSLs and the spatial distribution of concentrations greater than these levels, the soil and groundwater sampling performed adequately defines the horizontal and vertical extent of COPCs to support a site-specific risk assessment.

Using soil and groundwater data collected in accordance with the Work Plan and *Site Characterization Sampling and Analysis Plan – Tank Group 04* (SAP) submitted to PADEP on December 5, 2022, and the methodologies as described in Section 5 of the Risk Assessment, cumulative cancer risk and noncancer HI estimates for the exposure of current and reasonably expected future receptor populations to COPCs in soil and groundwater were calculated. Cumulative cancer risk and noncancer HI estimates for the exposure of routine workers to COPCs in soil via vapor intrusion are greater than the risk management goals used by PADEP and may warrant risk management action. All other exposure scenarios result in cumulative cancer risk and noncancer HI below the risk management goals.

As presented on **Table 5 of the Risk Assessment** and **Figure 11**, locations with soil COPCs concentrations that could result in cumulative cancer risk or HI estimates above the risk management goal for potential routine workers via vapor intrusion from soil include PB-826-14, PB-826-15, PB-840-09, PB-847-15, PB-848-04, PB-848-06, PB-848-15, PB-881-10, PB-882-16, PB-884-09, PB-884-15 and PB-884-25. These unacceptable cancer risk and HI estimates are predominately driven by benzene, cumene, ethyl benzene, 124-TMB, 135-TMB, xylenes (total), and naphthalene. However, as discussed in Section 3.1 of this Report, exposure to soil via vapor intrusion is evaluated in this Risk Assessment but is segregated to support remedial planning.

Aside from vapor intrusion, the results of the site-specific risk assessment indicate that there are no unacceptable risks to human health. As discussed in Section 7.3.3, vapor intrusion will be managed separately through pathway elimination, and therefore, no further risk management action at the Site is recommended.



9 Ecological Screening Evaluation

The following describes the ecological screening evaluation that was performed for the Site. This evaluation was conducted in accordance with 25 PA Code § 250.311, as specified in 25 PA Code § 245.310(28). The regulatory framework for conducting an ecological screening evaluation under the Site-Specific Standard is outlined in Section III.I and summarized in the Ecological Screening Flow Chart provided in Figure III-11 of PADEP's Land Recycling Program Technical Guidance Manual (2021). Under the Site-Specific standard, PADEP generally follows the USEPA Ecological Risk Assessment Guidance for Superfund (USEPA 1997). The USEPA ecological risk assessment process is comprised of eight steps.

The Initial Screening phase of the process consists of Steps 1 and 2, as follows:

- Step 1: Fundamental Components (Screening-level Problem Formulation and Ecological Effects Evaluation).
- Step 2: Preliminary Exposure Estimate and Risk Assessment.

As indicated on Figure III-11 the Technical Guidance Manual, after completion of the Initial Screen (Steps 1 and 2), the qualified investigator decides whether there exists substantial risk of ecological harm to species or habitats of concern. If not, then, no further ecological evaluation would be warranted.

Under Step 1 of the Initial Screen, a preliminary evaluation is performed to determine whether there is potential for impact on species or habitats of concern. In order to evaluate this, Terraphase first conducted an assessment to determine whether species or habitats of concern are present at the site. If species or habitats of concern are not identified, the completion of Step 2 and any subsequent steps in the ecological risk assessment process are not warranted. The evaluation of whether species or habitats of concern are present at the site consisted of the following:

- A search of PADEP's Pennsylvania Natural Diversity Inventory (PNDI) database.
- Site reconnaissance.

The PNDI search was performed for the Site and also a conservative study area that consisted of the Site and areas within a 2,500 foot radius of the site. The results of the PNDI search for the Site indicated no threatened and endangered species and/or special concern species and resources are present. The results of the PNDI search for the study area indicated that further review by the PA Department of Conservation and Natural Resources (DCNR) and the PA Fish and Boat Commission was warranted. Accordingly, Terraphase submitted a request for further review to DCNR and the PA Fish and Boat Commission. Based on further review by DCNR and the PA Fish and Boat Commission, no potential impacts to species or habitats of concern were identified within the study area. The results of the PNDI searches and subsequent correspondence with the PA Fish and Boat Commission are provided as **Appendix K**.

Because species or habitats of concern were not identified, the completion of Step 2 and any subsequent steps in the ecological risk assessment process are not warranted. As such, no further ecological screening is required.



10 Summary and Conclusions

Terraphase has prepared this Report, on behalf of PESRM, to detail the results of the Site Assessment and Site Characterization activities and to provide the supporting information demonstrating that adequate characterization has been performed for a reliable determination of the need for remedial measures based on the selected standard.

The Site Assessment and Site Characterization activities described in this Report were performed in accordance with the applicable provisions of Act 32, 25 PA Code Chapter 245 (Subchapter D), and Terraphase’s Work Plan (2021). The specific ASTs addressed in this Report include:

- PB 881 (PADEP No. 011A)
- PB 886 (PADEP No. 012A)
- PB 191 (PADEP No. 040A)
- PB 826 (PADEP No. 049A)
- PB 840 (PADEP No. 053A)
- PB 841 (PADEP No. 054A)
- PB 847 (PADEP No. 055A)
- PB 882 (PADEP No. 056A)
- PB 883 (PADEP No. 057A)
- PB 884 (PADEP No. 058A)
- PB 885 (PADEP No. 059A)
- PB 843 (PADEP No. 086A)
- PB 848 (PADEP No. 088A)

Visual observations of the ASTs in Tank Group 04 revealed no indications of release. Based upon the results, no evidence of a release from PB 191, PB 826, PB 841, PB 843, PB 847, PB 881, PB 882, PB 883, PB 885, and PB 886 was identified. The Site Assessment outcome for PB 191, PB 826, PB 841, PB 843, PB 847, PB 881, PB 882, PB 883, PB 885, and PB 886 is “No Obvious Contamination – Sample Results Meet Action Levels”.

Based upon the results of soil samples collected during the Site Assessment and a comparison to generic MSCs, potential releases of regulated substances to the environment from PB 840, PB 848, and PB 884 were identified. The Site Assessment outcome category for these ASTs is “No Obvious Contamination – Sample Results Do Not Meet Action Levels”. Notifications of release were submitted to the PADEP on August 10, 2022. PADEP assigned the release in Tank Group 04 to Incident No. 57976. The notifications indicated that unknown amounts of petroleum-related substances were potentially released in Tank Group 04 from these ASTs.

Site Characterization soil and groundwater sampling were subsequently performed in Tank Group 04. The results of the investigations identified soil and groundwater COPCs at concentrations greater than site-specific RBSLs. The results of the sampling have indicated that COPCs have been adequately characterized with respect to the RBSLs.

The potential significance of COPC concentrations were evaluated via a site-specific risk assessment. The risk assessment demonstrates that, aside from vapor intrusion exposure which is expected to be managed separately following additional characterization/evaluation and eventually through pathway elimination, COPC concentrations in the area do not pose an unacceptable risk to human health or the environment and do not warrant remedial action. Upon approval of this Site Characterization Report, PESRM will prepare and submit a Remedial Action Completion Report for Tank Group 04.



11 References

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Table 1

Aboveground Storage Tank Details

Philadelphia Energy Systems Refinery and Marketing, Philadelphia, PA

Facility	Tank Group	State Regulation Number	Tank Number	Design Capacity (gal)	Primary Product	Proposed Analyte List ^x	Regulatory Status	Facility ID	Status Modification Date	Tank Type	Double Bottom	Diameter (ft)	Height (ft)	Remaining Liquid (gal)	GPS Survey Complete	Demo Complete	Storage Tanks Reg./Permit App Form Submitted	Release Notification	Incident No.	Int. Remedial/Corrective Action Required
Point Breeze	4	011A	PB 881	8,568,000	Crude	Short List 1-5	R	51-33620	1/8/2022	EFR	Y, Removed	160	56		Y	Y	2/3/2022			
Point Breeze	4	012A	PB 886	13,158,600	Crude	Short List 1-5	R	51-33620	8/26/2021	IFR	Y, Removed	200	56		Y	Y	9/23/2021			
Point Breeze	4	040A	PB 191	634,200	Recovered Oil	Short List 1-6	R	51-33620	11/23/2021	EFR	Y, Removed	52	41			Y	12/16/2021			
Point Breeze	4	049A	PB 826	8,568,000	Crude	Short List 1-5	R	51-33620	4/18/2022	EFR	Y, Removed	160	57		Y	Y	4/27/2022			
Point Breeze	4	053A	PB 840	5,758,200	Crude	Short List 1-5	R	51-33620	3/4/2022	EFR	Y, Removed	140	50		Y	Y	3/30/2022	8/10/2022	57976	
Point Breeze	4	054A	PB 841	5,758,200	Crude	Short List 1-5	R	51-33620	3/14/2022	EFR	Y, Removed	140	49		Y	Y	3/30/2022			
Point Breeze	4	055A	PB 847	6,346,200	Crude	Short List 1-5	R	51-33620	2/3/2022	IFR	Y, Removed	150	49		Y	Y	2/3/2022			
Point Breeze	4	056A	PB 882	8,421,000	Crude	Short List 1-5	R	51-33620	5/20/2021	EFR	Y, Removed	160	56		Y	Y	6/18/2021			
Point Breeze	4	057A	PB 883	8,568,000	Crude	Short List 1-5	R	51-33620	11/24/2021	EFR	Y, Removed	160	56.5		Y	Y	12/16/2021			
Point Breeze	4	058A	PB 884	13,158,600	Crude	Short List 1-5	R	51-33620	11/1/2021	EFR	Y, Removed	200	56		Y	Y	12/16/2021	8/10/2022	57976	
Point Breeze	4	059A	PB 885	13,158,600	Crude	Short List 1-5	R	51-33620	9/23/2021	IFR	Y, Removed	200	56		Y	Y	9/27/2021			
Point Breeze	4	086A	PB 843	6,346,200	Crude	Short List 1-5	R	51-33620	3/16/2022	EFR	Y, Removed	150	48		Y	Y	3/30/2022			
Point Breeze	4	088A	PB 848	5,640,852	Light Cycle Oil	Short List 1-5	R	51-33620	1/20/2022	EFR	Y, Removed	140	50		Y	Y	2/3/2022	8/10/2022	57976	

Abbreviations:

ERF -- External Floating Roof

IRF -- Internal Floating Roof

Table 2

Site-Specific Risk Based Screening Levels (Target Risk of 1x10⁻⁵ and HQ of 0.1)

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Chem Group	Chemical	CASRN	Soil				Groundwater					
			Routine Worker Direct Contact (mg/kg)	Routine Worker Vapor Intrusion (mg/kg)	Construction Worker Direct Contact (mg/kg)	Soil MtGW (mg/kg)	Nonpotable Groundwater Use (mg/L)	Routine Worker Volatilization to Outdoor Air (mg/L)	Routine Worker Vapor Intrusion (mg/L)	Construction Worker Direct Contact (mg/L)	Off-Site Resident Vapor Intrusion (mg/L)	Groundwater MTSW (mg/L)
VOC	Benzene	71-43-2	6.3E+01	4.6E-01	8.7E+00	9.8E+01	3.0E-01	5.5E+02	3.8E+00	4.0E+00	2.5E-01	1.3E+02
VOC	Cumene	98-82-8	1.0E+03	6.1E+00	8.7E+01	1.0E+03	3.7E+01	9.1E+03	6.3E+01	3.0E+01	4.0E+00	2.6E+00
VOC	1,2-Dibromoethane	106-93-4	1.2E+00	7.1E-03	1.8E+00	3.2E+00	1.7E-02	1.6E+01	1.1E-01	9.1E-01	7.9E-03	NSW
VOC	1,2-Dichloroethane	107-06-2	1.6E+01	1.1E-01	8.1E+00	3.3E+01	3.3E-01	1.7E+02	1.2E+00	4.9E+00	8.2E-02	3.1E+03
VOC	Ethyl Benzene	100-41-4	2.3E+03	1.5E+01	1.3E+03	8.2E+02	2.0E+00	2.2E+04	1.5E+02	4.0E+01	9.7E+00	1.3E+01
VOC	Methyl tert-butyl ether	1634-04-4	2.4E+03	1.6E+01	3.9E+02	5.9E+03	2.1E+01	2.9E+04	2.1E+02	1.9E+02	1.5E+01	1.1E+04
VOC	Toluene	108-88-3	8.0E+03	7.6E+01	6.5E+02	9.8E+03	2.5E+01	1.0E+05	7.0E+02	2.0E+02	4.5E+01	5.2E+01
VOC	1,2,4-Trimethylbenzene	95-63-6	1.8E+02	9.2E-01	7.0E+01	2.5E+02	8.7E+00	1.4E+03	9.7E+00	1.5E+01	6.3E-01	3.3E+01
VOC	1,3,5-Trimethylbenzene	108-67-8	2.2E+02	9.2E-01	9.9E+01	2.4E+02	8.8E+00	1.3E+03	9.1E+00	1.5E+01	5.9E-01	7.1E+01
VOC	Xylenes (total)	1330-20-7	2.4E+02	1.5E+00	5.1E+01	3.4E+02	3.7E+00	1.9E+03	1.3E+01	1.7E+01	8.6E-01	2.1E+02
SVOC	Acenaphthene	83-32-9	9.3E+03	WIT	9.2E+03	NA	5.7E+01	WIT	WIT	3.9E+03	WIT	9.0E+00
SVOC	Anthracene	120-12-7	4.6E+04	WIT	4.6E+04	NA	2.4E+02	WIT	WIT	1.9E+04	WIT	4.0E+01
SVOC	Benzo(a)anthracene	56-55-3	4.3E+02	NV	3.2E+03	NA	1.0E-01	NV	NV	1.4E+03	NV	1.3E-02
SVOC	Benzo(a)pyrene	50-32-8	4.3E+01	NV	7.7E+00	NA	1.0E-02	NV	NV	5.8E+00	NV	1.3E-03
SVOC	Benzo(b)fluoranthene	205-99-2	4.3E+02	NV	3.2E+03	NA	1.6E-01	NV	NV	1.4E+03	NV	1.3E-02
SVOC	Benzo(g,h,i)perylene	191-24-2	4.6E+03	NV	1.4E+04	NA	4.4E+01	NV	NV	5.8E+03	NV	1.2E-02
SVOC	Benzo(k)fluoranthene	207-08-9	4.3E+03	NV	3.2E+04	NA	9.9E-01	NV	NV	1.4E+04	NV	1.3E-01
SVOC	Chrysene	218-01-9	4.3E+04	NV	3.2E+05	NA	1.6E+01	NV	NV	1.4E+05	NV	1.3E+00
SVOC	Dibenz(a,h)anthracene	53-70-3	4.3E+01	NV	3.2E+02	NA	9.8E-03	NV	NV	1.4E+02	NV	1.3E-03
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	2.0E-01	NV	1.3E+00	2.0E+00	3.9E-05	NV	NV	5.5E-01	NV	NSW
SVOC	Ethanol	64-17-5	1.0E+06	NV	1.0E+06	1.0E+06	1.0E+04	NV	NV	8.3E+05	NV	NSW
SVOC	Fluorene	86-73-7	6.2E+03	WIT	1.8E+04	NA	9.7E+01	WIT	WIT	7.8E+03	WIT	7.0E+00
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	4.3E+02	NV	3.2E+03	NA	1.0E-01	NV	NV	1.4E+03	NV	1.3E-02
SVOC	Naphthalene	91-20-3	4.1E+01	5.4E-01	6.0E+00	2.7E+01	3.9E-01	1.2E+02	8.8E-01	2.8E-01	6.7E-02	4.3E+01
SVOC	Phenanthrene	85-01-8	4.6E+03	WIT	1.4E+04	NA	7.3E+01	WIT	WIT	5.8E+03	WIT	1.0E+00
SVOC	Pyrene	129-00-0	4.6E+03	NV	1.4E+04	NA	5.0E+01	NV	NV	5.8E+03	NV	3.0E+00
SVOC	Tetraethylene Glycol	112-60-7	3.5E+05	NV	9.6E+04	1.2E+05	2.9E+02	NV	NV	3.9E+04	NV	1.9E+05
PCB	PCBs (total)	1336-36-3	3.0E+00	NV	2.3E+00	NA	1.5E-02	NV	NV	9.7E-01	NV	6.4E-04
INORG	Antimony	7440-36-0	1.3E+02	NV	2.3E+01	2.0E+01	2.2E-02	NV	NV	1.4E+00	NV	6.4E+01
INORG	Arsenic	7440-38-2	7.1E+01	NV	1.0E+02	1.2E+01	2.1E-02	NV	NV	5.3E+01	NV	1.4E+00
INORG	Chromium III	16065-83-1	4.6E+05	NV	2.9E+04	1.0E+06	1.1E+01	NV	NV	5.3E+02	NV	7.4E+01
INORG	Chromium VI	18540-29-9	1.8E+02	NV	2.8E+02	1.5E+00	3.9E-03	NV	NV	1.7E+00	NV	1.1E+01
INORG	Cyanide (total)	57-12-5	1.5E+01	8.6E-01	8.8E+00	9.9E+00	3.0E-01	2.4E+01	2.4E-01	2.6E-01	2.5E-02	4.0E+01
INORG	Lead	7439-92-1	2.5E+03	NV	2.5E+03	4.5E+04	IE	NV	NV	IE	NV	2.5E+00
INORG	Nickel	7440-02-0	6.2E+03	NV	7.0E+02	1.7E+03	1.3E+00	NV	NV	8.6E+01	NV	5.2E+01
INORG	Vanadium	7440-62-2	1.6E+03	NV	3.5E+02	2.8E+03	1.4E-01	NV	NV	6.9E+00	NV	1.0E+02

Abbreviations:

Chem Group - chemical group

INORG - metals

SVOC - semi-volatile organic compounds

VOC - volatile organic compounds

MtGW - migration to groundwater

MTSW - migration to surface water

NV - not volatile

WIT - without inhalation toxicity data

NA - not applicable: target groundwater concentration times DAF is greater than constituent's solubility.

IE - inadequate exposure

NSW - no surface water quality criteria available

Table 3**Evergreen Comprehensive List, Constituents of Concern (COC)**

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Chem Group	Chemical	CASRN
VOC	Benzene	71-43-2
VOC	sec-Butylbenzene	135-98-8
VOC	tert-Butylbenzene	98-06-6
VOC	Cumene	98-82-8
VOC	Cyclohexane	110-82-7
VOC	1,2-Dibromoethane	106-93-4
VOC	1,2-Dichloroethane	107-06-2
VOC	Ethyl Benzene	100-41-4
VOC	n-Hexane	110-54-3
VOC	Methyl tert-butyl ether	1634-04-4
VOC	Toluene	108-88-3
VOC	1,2,4-Trimethylbenzene	95-63-6
VOC	1,3,5-Trimethylbenzene	108-67-8
VOC	Xylenes (total)	1330-20-7
SVOC	Acenaphthene	83-32-9
SVOC	Anthracene	120-12-7
SVOC	Benzo(a)anthracene	56-55-3
SVOC	Benzo(a)pyrene	50-32-8
SVOC	Benzo(b)fluoranthene	205-99-2
SVOC	Benzo(g,h,i)perylene	191-24-2
SVOC	Benzo(k)fluoranthene	207-08-9
SVOC	1,1-Biphenyl	92-52-4
SVOC	Chrysene	218-01-9
SVOC	Dibenz(a,h)anthracene	53-70-3
SVOC	2,4-Dimethylphenol	105-67-9
SVOC	2,4-Dinitrophenol	51-28-5
SVOC	Fluoranthene	206-44-0
SVOC	Fluorene	86-73-7
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5
SVOC	2-Methylnaphthalene	91-57-6
SVOC	2-Methylphenol	95-48-7
SVOC	3-Methylphenol	108-39-4
SVOC	4-Methylphenol	106-44-5
SVOC	Naphthalene	91-20-3
SVOC	4-Nitrophenol	100-02-7
SVOC	Phenanthrene	85-01-8
SVOC	Phenol	108-95-2
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7
SVOC	Diethylphthalate	84-66-2
SVOC	Di-n-butylphthalate	84-74-2
SVOC	Pyrene	129-00-0
SVOC	Pyridine	110-86-1
SVOC	1-Benzazine	91-22-5
INORG	Cobalt	7440-48-4
INORG	Lead	7439-92-1
INORG	Nickel	7440-02-0
INORG	Vanadium	7440-62-2
INORG	Zinc	7440-66-6

Table 4a

Soil Results Compared to Risk Based Screening Levels

Tank Group 04 (Historical)

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Chem Group	Chemical	CASRN	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Routine Worker Direct Contact (mg/kg)	Ratio of Max Detect to Routine Worker Direct Contact	Construction Worker Direct Contact (mg/kg)	Ratio of Max Detect to Construction Worker Direct Contact	Soil MtGW Screening Level (mg/kg)	Ratio of Max Detect to Soil MtGW
SOIL	VOC	Benzene	71-43-2	287	92	0.00024	1.5	36	63	0.57	8.7	4.1	98	0.37
SOIL	VOC	sec-Butylbenzene	135-98-8	14	5	0.0029	3.8	18						
SOIL	VOC	tert-Butylbenzene	98-06-6	14	3	0.0021	0.40	1.1						
SOIL	VOC	Cumene	98-82-8	261	84	0.0033	2.7	14	1000	0.014	87	0.16	1000	0.014
SOIL	VOC	Cyclohexane	110-82-7	14	8	0.0020	1.1	8.1						
SOIL	VOC	Ethyl Benzene	100-41-4	261	72	0.00081	7.2	73	2300	0.032	1300	0.056	820	0.089
SOIL	VOC	Methyl tert-butyl ether	1634-04-4	78	7	0.00024	0.041	0.21	2400	0.000085	390	0.00053	5900	0.000035
SOIL	VOC	Toluene	108-88-3	261	73	0.00035	6.0	140	8000	0.018	650	0.22	9800	0.014
SOIL	VOC	1,2,4-Trimethylbenzene	95-63-6	74	17	0.00059	8.0	75	180	0.42	70	1.1	250	0.30
SOIL	VOC	1,3,5-Trimethylbenzene	108-67-8	74	13	0.00027	3.5	27	220	0.12	99	0.28	240	0.11
SOIL	VOC	Xylenes (total)	1330-20-7	116	40	0.00070	11	97	240	0.40	51	1.9	340	0.29
SOIL	SVOC	Acenaphthene	83-32-9	14	1	0.27	0.27	0.27	9300	0.000029	9200	0.000030		
SOIL	SVOC	Anthracene	120-12-7	267	75	0.00085	0.52	4.0	46000	0.000087	46000	0.000087		
SOIL	SVOC	Benzo(a)anthracene	56-55-3	267	92	0.0041	0.71	5.0	430	0.012	3200	0.0016		
SOIL	SVOC	Benzo(a)pyrene	50-32-8	267	91	0.0061	0.65	5.0	43	0.12	7.7	0.65		
SOIL	SVOC	Benzo(b)fluoranthene	205-99-2	267	97	0.0048	0.68	4.4	430	0.010	3200	0.0014		
SOIL	SVOC	Benzo(g,h,i)perylene	191-24-2	267	78	0.011	0.39	2.0	4600	0.00043	14000	0.00014		
SOIL	SVOC	Benzo(k)fluoranthene	207-08-9	14	1	0.049	0.049	0.049	4300	0.000011	32000	0.0000015		
SOIL	SVOC	Chrysene	218-01-9	267	102	0.0053	0.71	4.4	43000	0.00010	320000	0.000014		
SOIL	SVOC	Fluoranthene	206-44-0	14	3	0.042	0.21	0.33						
SOIL	SVOC	Fluorene	86-73-7	281	92	0.0057	1.3	17	6200	0.0027	18000	0.00094		
SOIL	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	183	53	0.0040	0.35	1.9	430	0.0044	3200	0.00059		
SOIL	SVOC	Naphthalene	91-20-3	281	112	0.0020	5.6	52	41	1.3	6.0	8.7	27	1.9
SOIL	SVOC	Phenanthrene	85-01-8	281	157	0.0051	3.9	230	4600	0.050	14000	0.016		
SOIL	SVOC	Pyrene	129-00-0	267	122	0.014	1.4	37	4600	0.0080	14000	0.0026		
SOIL	INORG	Cobalt	7440-48-4	14	14	4.9	7.7	10						
SOIL	INORG	Lead	7439-92-1	136	136	1.5	4500	66000	2520	26	2520	26	45000	1.5
SOIL	INORG	Nickel	7440-02-0	14	14	6.2	14	29	6200	0.0047	700	0.042	1700	0.017
SOIL	INORG	Vanadium	7440-62-2	14	14	10	42	210	1600	0.13	350	0.59	2800	0.074
SOIL	INORG	Zinc	7440-66-6	14	14	18	110	700						

Notes:

Only constituents detected are shown.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the criteria for Xylenes (total).

Ratios of concentration to the MSCs and RBSLs greater than 1 are shaded in bold.

Chem Group - chemical group; INORG - metals; SVOC - semi-volatile organic compounds; VOC - volatile organic compounds

Table 4b

Groundwater Results Compared to Risk Based Screening Levels

Tank Group 04 (Historical)

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	Nonpotable Groundwater Use (mg/L)	Ratio of Max Detect to Nonpotable Groundwater Use	Construction Worker Direct Contact (mg/L)	Ratio of Max Detect to Construction Worker Direct Contact	Groundwater Migration to Surface Water (mg/L)	Ratio of Max Detect to Groundwater Migration to Surface Water
Groundwater	lower aquifer	VOC	Benzene	71-43-2	T	36	3	0.00020	0.0010	0.0022	0.30	0.0073	4.0	0.00055	130	0.000017
Groundwater	lower aquifer	VOC	tert-Butylbenzene	98-06-6	T	14	1	0.0015	0.0015	0.0015						
Groundwater	lower aquifer	VOC	Methyl tert-butyl ether	1634-04-4	T	40	34	0.00043	0.033	0.093	21	0.0044	190	0.00049	11000	0.0000084
Groundwater	lower aquifer	VOC	Toluene	108-88-3	T	36	2	0.00050	0.0033	0.0060	25	0.00024	200	0.000030	52	0.00012
Groundwater	lower aquifer	VOC	Xylenes (total)	1330-20-7	T	36	1	0.0020	0.0020	0.0020	3.7	0.00054	17	0.00012	210	0.000010
Groundwater	lower aquifer	SVOC	Acenaphthene	83-32-9	T	14	1	0.000088	0.000088	0.000088	57	0.0000015	3900	0.000000023	9.0	0.000010
Groundwater	lower aquifer	SVOC	Anthracene	120-12-7	T	28	1	0.000044	0.000044	0.000044	240	0.00000018	19000	0.0000000023	40	0.0000011
Groundwater	lower aquifer	SVOC	2-Methylnaphthalene	91-57-6	T	14	1	0.00030	0.00030	0.00030						
Groundwater	lower aquifer	SVOC	Naphthalene	91-20-3	T	36	3	0.00010	0.00028	0.00053	0.39	0.0014	0.28	0.0019	43	0.000012
Groundwater	lower aquifer	SVOC	Phenanthrene	85-01-8	T	36	2	0.00019	0.00019	0.00020	73	0.0000027	5800	0.000000034	1.0	0.00020
Groundwater	lower aquifer	SVOC	Pyrene	129-00-0	T	36	1	0.000051	0.000051	0.000051	50	0.0000010	5800	0.0000000088	3.0	0.000017
Groundwater	lower aquifer	INORG	Arsenic	7440-38-2	D	12	11	0.0021	0.013	0.035	0.021	1.6	53	0.00065	1.4	0.025
Groundwater	lower aquifer	INORG	Arsenic	7440-38-2	T	12	12	0.0033	0.029	0.055	0.021	2.6	53	0.0010	1.4	0.040
Groundwater	lower aquifer	INORG	Cobalt	7440-48-4	D	26	20	0.0039	0.0088	0.019						
Groundwater	lower aquifer	INORG	Cobalt	7440-48-4	T	12	10	0.0060	0.0093	0.013						
Groundwater	lower aquifer	INORG	Lead	7439-92-1	D	34	4	0.0036	0.0072	0.013					2.5	0.0051
Groundwater	lower aquifer	INORG	Lead	7439-92-1	T	14	11	0.00010	0.0021	0.0093					2.5	0.0037
Groundwater	lower aquifer	INORG	Manganese	7439-96-5	D	12	12	0.25	1.3	2.9						
Groundwater	lower aquifer	INORG	Manganese	7439-96-5	T	12	12	0.26	1.3	3.0						
Groundwater	lower aquifer	INORG	Mercury	7439-97-6	T	6	2	0.000056	0.000057	0.000057						
Groundwater	lower aquifer	INORG	Nickel	7440-02-0	D	14	13	0.0021	0.0041	0.0084	1.3	0.006	86	0.00010	52	0.00016
Groundwater	lower aquifer	INORG	Zinc	7440-66-6	D	14	3	0.035	0.061	0.11						
Groundwater	NA	PFAS	Perfluorooctanoic Acid	335-67-1	T	1	1	0.000020	0.000020	0.000020						
Groundwater	Unassigned	VOC	Benzene	71-43-2	T	2	1	1.9	1.9	1.9	0.30	6.3	4.0	0.48	130	0.015
Groundwater	Unassigned	VOC	Cumene	98-82-8	T	2	1	0.15	0.15	0.15	37	0.0041	30	0.0050	2.6	0.058
Groundwater	Unassigned	VOC	1,2-Dibromoethane	106-93-4	T	2	1	0.000033	0.000033	0.000033	0.017	0.0019	0.91	0.000036		
Groundwater	Unassigned	VOC	Ethyl Benzene	100-41-4	T	2	1	0.35	0.35	0.35	2.0	0.18	40	0.0088	13	0.027
Groundwater	Unassigned	VOC	Xylenes (total)	1330-20-7	T	2	1	0.63	0.63	0.63	3.7	0.17	17	0.037	210	0.0030
Groundwater	Unassigned	SVOC	Fluorene	86-73-7	T	2	1	0.011	0.011	0.011	97	0.00011	7800	0.0000014	7.0	0.0016
Groundwater	Unassigned	SVOC	Naphthalene	91-20-3	T	2	1	0.22	0.22	0.22	0.39	0.56	0.28	0.79	43	0.0051
Groundwater	Unassigned	SVOC	Phenanthrene	85-01-8	T	2	1	0.015	0.015	0.015	73	0.00021	5800	0.0000026	1.0	0.015
Groundwater	unconfined	VOC	Benzene	71-43-2	T	106	66	0.00046	0.36	3.33	0.30	11	4	0.83	130	0.026
Groundwater	unconfined	VOC	sec-Butylbenzene	135-98-8	T	35	11	0.0010	0.0054	0.013						
Groundwater	unconfined	VOC	tert-Butylbenzene	98-06-6	T	35	6	0.0021	0.0023	0.0027						
Groundwater	unconfined	VOC	Cumene	98-82-8	T	91	49	0.00046	0.025	0.087	37	0.0024	30.00	0.0029	2.6	0.033
Groundwater	unconfined	VOC	Cyclohexane	110-82-7	T	35	20	0.012	0.12	0.71						
Groundwater	unconfined	VOC	1,2-Dibromoethane	106-93-4	T	91	1	0.000052	0.00005	0.000052	0.017	0.0031	0.91	0.000057		
Groundwater	unconfined	VOC	1,2-Dichloroethane	107-06-2	T	92	1	0.0040	0.0040	0.0040	0.33	0.012	4.9	0.00082	3100	0.0000013
Groundwater	unconfined	VOC	Ethyl Benzene	100-41-4	T	106	48	0.00070	0.18	2.9	2.0	1.5	40	0.073	13	0.22
Groundwater	unconfined	VOC	Hexane	110-54-3	T	35	11	0.0011	0.032	0.11						
Groundwater	unconfined	VOC	2-Hexanone	591-78-6	T	1	1	0.12	0.12	0.12						
Groundwater	unconfined	VOC	Methyl tert-butyl ether	1634-04-4	T	94	13	0.00038	0.12	1.2	21	0.057	190	0.0063	11000	0.00011
Groundwater	unconfined	VOC	tert Butyl alcohol	75-65-0	T	1	1	16	16	16						
Groundwater	unconfined	VOC	Toluene	108-88-3	T	106	44	0.00028	0.089	1.8	25	0.071	200	0.0089	52	0.034
Groundwater	unconfined	VOC	1,2,4-Trimethylbenzene	95-63-6	T	69	27	0.00023	0.11	1.1	8.7	0.13	15	0.075	33	0.034
Groundwater	unconfined	VOC	1,3,5-Trimethylbenzene	108-67-8	T	69	25	0.00050	0.054	0.37	8.8	0.043	15	0.025	71	0.0053
Groundwater	unconfined	VOC	Xylenes (total)	1330-20-7	T	106	49	0.00025	0.54	6.1	3.7	1.6	17	0.36	210	0.029
Groundwater	unconfined	SVOC	Acenaphthene	83-32-9	T	35	26	0.00010	0.037	0.89	57	0.016	3900	0.00023	9.0	0.099
Groundwater	unconfined	SVOC	Anthracene	120-12-7	T	61	25	0.000082	0.015	0.36	240	0.0015	19000	0.000019	40	0.0089
Groundwater	unconfined	SVOC	Benzo(a)anthracene	56-55-3	T	74	14	0.000041	0.00072	0.0024	0.10	0.024	1400	0.0000017	0.013	0.19
Groundwater	unconfined	SVOC	Benzo(a)pyrene	50-32-8	T	74	7	0.000025	0.00051	0.0025	0.010	0.25	5.8	0.00042	0.0013	1.9
Groundwater	unconfined	SVOC	Benzo(b)fluoranthene	205-99-2	T	74	7	0.000029	0.00064	0.0025	0.16	0.016	1400	0.0000018	0.013	0.19

Table 4b
Groundwater Results Compared to Risk Based Screening Levels
Tank Group 04 (Historical)

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	Nonpotable Groundwater Use (mg/L)	Ratio of Max Detect to Nonpotable Groundwater Use	Construction Worker Direct Contact (mg/L)	Ratio of Max Detect to Construction Worker Direct Contact	Groundwater Migration to Surface Water (mg/L)	Ratio of Max Detect to Groundwater Migration to Surface Water
Groundwater	unconfined	SVOC	Benzo(g,h,i)perylene	191-24-2	T	62	4	0.00013	0.00060	0.0018	44	0.000042	5800	0.00000032	0.012	0.15
Groundwater	unconfined	SVOC	Benzo(k)fluoranthene	207-08-9	T	35	3	0.000064	0.000094	0.00012	0.99	0.00012	14000	0.000000088	0.13	0.00095
Groundwater	unconfined	SVOC	1,1-Biphenyl	92-52-4	T	35	1	0.26	0.26	0.26						
Groundwater	unconfined	SVOC	Chrysene	218-01-9	T	105	17	0.000059	0.0013	0.0060	16	0.00038	140000	0.000000043	1.3	0.0046
Groundwater	unconfined	SVOC	Dibenz(a,h)anthracene	53-70-3	T	47	2	0.000061	0.000080	0.00010	0.010	0.010	140	0.00000070	0.0013	0.075
Groundwater	unconfined	SVOC	Fluoranthene	206-44-0	T	35	14	0.000070	0.00068	0.0041						
Groundwater	unconfined	SVOC	Fluorene	86-73-7	T	87	50	0.00011	0.021	0.75	97	0.0077	7800	0.00010	7.0	0.11
Groundwater	unconfined	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	50	3	0.000063	0.00010	0.00014	0.10	0.0014	1400	0.00000010	0.013	0.011
Groundwater	unconfined	SVOC	2-Methylnaphthalene	91-57-6	T	35	17	0.00044	0.51	8.4						
Groundwater	unconfined	SVOC	3&4-Methylphenol	65794-96-9	T	35	1	0.016	0.016	0.016						
Groundwater	unconfined	SVOC	Naphthalene	91-20-3	T	91	36	0.00060	0.11	2.4	0.39	6.2	0.28	8.6	43	0.056
Groundwater	unconfined	SVOC	Phenanthrene	85-01-8	T	91	50	0.000062	0.056	2.3	73	0.031	5800	0.00039	1.0	2.3
Groundwater	unconfined	SVOC	Phenol	108-95-2	T	35	1	0.013	0.013	0.013						
Groundwater	unconfined	SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	T	47	11	0.0010	0.027	0.19						
Groundwater	unconfined	SVOC	Pyrene	129-00-0	T	91	35	0.000066	0.0061	0.11	50	0.0022	5800	0.000019	3.0	0.037
Groundwater	unconfined	INORG	Arsenic	7440-38-2	D	12	9	0.011	0.023	0.037	0.021	1.8	53	0.00070	1.4	0.026
Groundwater	unconfined	INORG	Barium	7440-39-3	D	11	10	0.086	0.34	0.97						
Groundwater	unconfined	INORG	Chromium (total)	7440-47-3	D	11	8	0.021	0.11	0.34						
Groundwater	unconfined	INORG	Cobalt	7440-48-4	D	47	20	0.0020	0.016	0.093						
Groundwater	unconfined	INORG	Lead	7439-92-1	D	78	12	0.000074	0.0028	0.021					2.5	0.0086
Groundwater	unconfined	INORG	Lead	7439-92-1	T	25	10	0.022	0.092	0.24					2.5	0.095
Groundwater	unconfined	INORG	Nickel	7440-02-0	D	35	16	0.0022	0.0064	0.043	1.3	0.033	86	0.00050	52	0.00082
Groundwater	unconfined	INORG	Vanadium	7440-62-2	D	35	1	0.015	0.015	0.015	0.14	0.10	6.9	0.0021	100	0.00015
Groundwater	unconfined	INORG	Zinc	7440-66-6	D	35	4	0.027	5.9	23						

Notes:
Only chemicals detected in the area are shown.
The criteria for Chromium (total) are the criteria provided by the agency for Chromium VI.
The criteria for 2-Methylnaphthalene are the criteria provided by the agency for Naphthalene.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the criteria for Xylenes (total).
Ratios of concentration to the RBSLs greater than 1 are shaded in bold.
Chem Group - chemical group; INORG - metals; SVOC - semi-volatile organic compounds; VOC - volatile organic compounds; PFAS - Per- and Polyfluoroalkyl Substances
Meas Basis - measured basis; T = total, D = dissolved

Table 5
Site Assessment Soil Sample MSC Exceedances
Tank Group 04 (Site Assessment)

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Location	Sample Name	Sample Type	Top Depth (ft)	Bottom Depth (ft)	Sample Date	Chem Group	Chemical	CASRN	Conc (mg/kg)	Qual	Non-Res Direct Contact with Soil (mg/kg)	Ratio of Max Detect to Non-Res Direct Contact with Soil	Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW (mg/kg)	Ratio of Conc to Non-Res Used Aquifer (TDS ≤ 2500) Soil-to-GW
Soil	PB-840-09	PB-840-09-SS01	N	4.5	5	07/08/22	VOC	Benzene	71-43-2	4.4		280	0.016	0.50	8.8
Soil	PB-848-04	PB-848-04-SS01	N	4	4.5	07/11/22	VOC	Benzene	71-43-2	1.8		280	0.0064	0.50	3.6
Soil	PB-848-04	PB-848-04-SS01	N	4	4.5	07/11/22	INORG	Lead	7439-92-1	716		1000	0.72	450	1.6
Soil	PB-848-07	PB-848-07-SS01	N	4.5	5	07/11/22	INORG	Lead	7439-92-1	3200		1000	3.2	450	7.1
Soil	PB-848-09	PB-848-09-SS01	N	4.5	5	07/11/22	INORG	Lead	7439-92-1	1140		1000	1.1	450	2.5
Soil	PB-848-10	PB-848-10-SS01	N	4.5	5	07/11/22	INORG	Lead	7439-92-1	721		1000	0.72	450	1.6
Soil	PB-848-11	PB-848-11-SS01	N	3	3.5	07/11/22	VOC	Benzene	71-43-2	0.87		280	0.0031	0.50	1.7
Soil	PB-848-15	PB-848-15-SS01	N	4.5	5	07/11/22	VOC	Benzene	71-43-2	1.1		280	0.0039	0.50	2.2
Soil	PB-848-17	PB-848-17-SS01	N	3	3.5	07/11/22	INORG	Lead	7439-92-1	1840		1000	1.8	450	4.1
Soil	PB-884-09	PB-884-09-SS01	N	3	3.5	07/14/22	VOC	Benzene	71-43-2	2.0		280	0.0071	0.50	4.0
Soil	PB-884-15	PB-884-15-SS01	N	3	3.5	07/14/22	VOC	Benzene	71-43-2	2.6		280	0.0093	0.50	5.2
Soil	PB-884-25	PB-884-25-SS01	N	4.5	5	07/15/22	VOC	Benzene	71-43-2	7.1		280	0.025	0.50	14

Notes:

The Non-Residential Direct Contact MSC for Soil is the lower of the Non-Residential Direct Contact MSCs for Surface Soil (0-2 ft) and Subsurface Soil (2-15 ft).

Ratios of concentration to the screening level greater than 1 are shaded in bold.

Chem Group - chemical group; VOCs - volatile organic compounds; INORG - metals

Table 6

COPCs Identified in Soil in Proximity to Tank Group 04 ASTs

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

PB 191	PB 826	PB 840	PB 841
None	None	1,2,4-Trimethylbenzene Xylenes (total) Naphthalene	None
PB 843	PB 847	PB 848	PB 881
None	Naphthalene	Lead	None
PB 882	PB 883	PB 884	PB 885
None	None	None	None
PB 886			
None			

Table 7
Monitoring Well Gauging Summary
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location ID	TOIC (ft AMSL)	January 3, 2023					
		Depth to Product (ft below TOIC)	Depth to Water (ft below TOIC)	Historical LNAPL Density	Depth to Water (Corrected) (ft below TOIC)	Groundwater Elevation (ft AMSL)	Total LNAPL Thickness (ft)
S-102	18.22	--	Dry		Dry	--	--
S-216	15.76	--	14.40		14.40	1.36	--
S-415	19.23	--	18.51		18.51	0.72	--
S-365	20.91	19.73	19.75	0.82	19.73	1.18	0.02
S-281	14.36	11.15	11.76	0.82	11.26	3.10	0.61
S-121	21.12	--	15.78		15.78	5.34	--
S-122	25.71	--	24.53		24.53	1.18	--
S-219	23.09	--	21.82		21.82	1.27	--
S-381	25.86	--	24.90		24.90	0.96	--
S-371	22.05	--	18.89		18.89	3.16	--
S-218	25.74	--	23.60		23.60	2.14	--
TG04-MW-01	17.80	--	16.66		16.66	1.14	--
TG04-MW-02	25.53	--	Dry		Dry	--	--
TG04-MW-03	23.51	--	16.98		16.98	6.53	--

Notes:

Corrected Depth to Water Levels factor historical LNAPL densities, where present.

Vertical Datum is NAVD 1988.

Table 8
Soil Results Compared to Risk Based Screening Levels
Tank Group 04 (Site Assessment; Site Characterization)
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Chem Group	Chemical	CASRN	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Routine Worker Direct Contact (mg/kg)	Ratio of Max Detect to Routine Worker Direct Contact	Construction Worker Direct Contact (mg/kg)	Ratio of Max Detect to Construction Worker Direct Contact	Soil MtGW Screening Level (mg/kg)	Ratio of Max Detect to Soil MtGW
Soil	VOC	Benzene	71-43-2	267	61	0.00019	0.34	7.1	63	0.11	8.7	0.82	98	0.072
Soil	VOC	Cumene	98-82-8	267	80	0.00010	0.65	15	1000	0.015	87	0.17	1000	0.015
Soil	VOC	Ethyl Benzene	100-41-4	267	50	0.00014	2.7	66	2300	0.029	1300	0.051	820	0.080
Soil	VOC	Methyl tert-butyl ether	1634-04-4	267	30	0.00026	0.0028	0.020	2400	0.000083	390	0.00005	5900	0.000034
Soil	VOC	Toluene	108-88-3	263	19	0.00069	2.0	15	8000	0.0019	650	0.023	9800	0.0015
Soil	VOC	1,2,4-Trimethylbenzene	95-63-6	267	58	0.00034	5.1	92	180	0.51	70	1.3	250	0.37
Soil	VOC	1,3,5-Trimethylbenzene	108-67-8	267	59	0.00025	1.6	33	220	0.15	99	0.33	240	0.14
Soil	VOC	Xylenes (total)	1330-20-7	267	54	0.00090	8.3	200	240	0.82	51	3.9	340	0.58
Soil	SVOC	Anthracene	120-12-7	263	29	0.00075	0.30	3.7	46000	0.000080	46000	0.000080		
Soil	SVOC	Benzo(a)anthracene	56-55-3	263	54	0.00094	0.19	4.5	430	0.010	3200	0.0014		
Soil	SVOC	Benzo(a)pyrene	50-32-8	263	31	0.0020	0.36	7.2	43	0.17	7.7	0.94		
Soil	SVOC	Benzo(b)fluoranthene	205-99-2	263	42	0.00078	0.23	4.4	430	0.010	3200	0.0014		
Soil	SVOC	Benzo(g,h,i)perylene	191-24-2	263	36	0.0020	0.21	5.2	4600	0.0011	14000	0.00037		
Soil	SVOC	Chrysene	218-01-9	263	59	0.00066	0.22	4.4	43000	0.00010	320000	0.000014		
Soil	SVOC	Fluorene	86-73-7	263	49	0.015	0.73	14	6200	0.0023	18000	0.00078		
Soil	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	9	6	0.031	0.070	0.11	430	0.00026	3200	0.000034		
Soil	SVOC	Naphthalene	91-20-3	267	56	0.0094	1.0	9.3	41	0.23	6.0	1.6	27	0.34
Soil	SVOC	Phenanthrene	85-01-8	263	74	0.00093	1.1	29	4600	0.0063	14000	0.0021		
Soil	SVOC	Pyrene	129-00-0	263	71	0.0014	0.20	2.9	4600	0.00063	14000	0.00021		
Soil	INORG	Lead	7439-92-1	267	266	1.0	45	3200	2520	1.3	2520	1.3	45000	0.071

Notes:

Only constituents detected are shown.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the criteria for Xylenes (total).

Ratios of concentration to the RBSLs greater than 1 are shaded in bold.

Chem Group - chemical group; INORG - metals; SVOC - semi-volatile organic compounds; VOC - volatile organic compounds

Table 9
Groundwater Results Compared to Risk Based Screening Levels
Tank Group 04 (Site Characterization)

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	Nonpotable Groundwater Use (mg/L)	Ratio of Max Detect to Nonpotable Groundwater Use	Construction Worker Direct Contact (mg/L)	Ratio of Max Detect to Construction Worker Direct Contact	Groundwater Migration to Surface Water (mg/L)	Ratio of Max Detect to Groundwater Migration to Surface Water
Groundwater	unconfined	VOC	Benzene	71-43-2	T	4	1	0.58	0.58	0.58	0.30	1.9	4.0	0.15	130	0.0045
Groundwater	unconfined	VOC	Cumene	98-82-8	T	4	2	0.00028	0.038	0.075	37	0.0020	30	0.0025	2.6	0.029
Groundwater	unconfined	VOC	Ethyl Benzene	100-41-4	T	4	1	0.11	0.11	0.11	2.0	0.055	40	0.0028	13	0.0085
Groundwater	unconfined	VOC	Toluene	108-88-3	T	4	1	0.011	0.011	0.011	25	0.00044	200	0.000055	52	0.00021
Groundwater	unconfined	VOC	1,2,4-Trimethylbenzene	95-63-6	T	4	1	0.054	0.054	0.054	8.7	0.0062	15	0.0036	33	0.0016
Groundwater	unconfined	VOC	1,3,5-Trimethylbenzene	108-67-8	T	4	1	0.013	0.013	0.013	8.8	0.0015	15	0.00087	71	0.00018
Groundwater	unconfined	VOC	Xylenes (total)	1330-20-7	T	4	1	0.19	0.19	0.19	3.7	0.050	17	0.011	210	0.00089
Groundwater	unconfined	SVOC	Anthracene	120-12-7	T	4	1	0.00011	0.00011	0.00011	240	0.00000046	19000	0.000000058	40	0.0000028
Groundwater	unconfined	SVOC	Benzo(a)anthracene	56-55-3	T	4	3	0.000030	0.00010	0.00018	0.10	0.0018	1400	0.00000013	0.013	0.014
Groundwater	unconfined	SVOC	Fluorene	86-73-7	T	4	1	0.00092	0.00092	0.00092	97	0.0000095	7800	0.00000012	7.0	0.00013
Groundwater	unconfined	SVOC	Naphthalene	91-20-3	T	4	1	0.0094	0.0094	0.0094	0.39	0.024	0.28	0.034	43	0.00022
Groundwater	unconfined	SVOC	Phenanthrene	85-01-8	T	4	1	0.00025	0.00025	0.00025	73	0.0000034	5800	0.00000043	1.0	0.00025
Groundwater	unconfined	SVOC	Pyrene	129-00-0	T	4	1	0.00006	0.000060	0.000060	50	0.0000012	5800	0.00000010	3.0	0.000020

Notes:

Only chemicals detected in the area are shown.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the criteria for Xylenes (total).

Ratios of concentration to the RBSLs greater than 1 are shaded in bold.

Chem Group - chemical group; INORG - metals; SVOC - semi-volatile organic compounds; VOC - volatile organic compounds

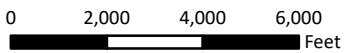
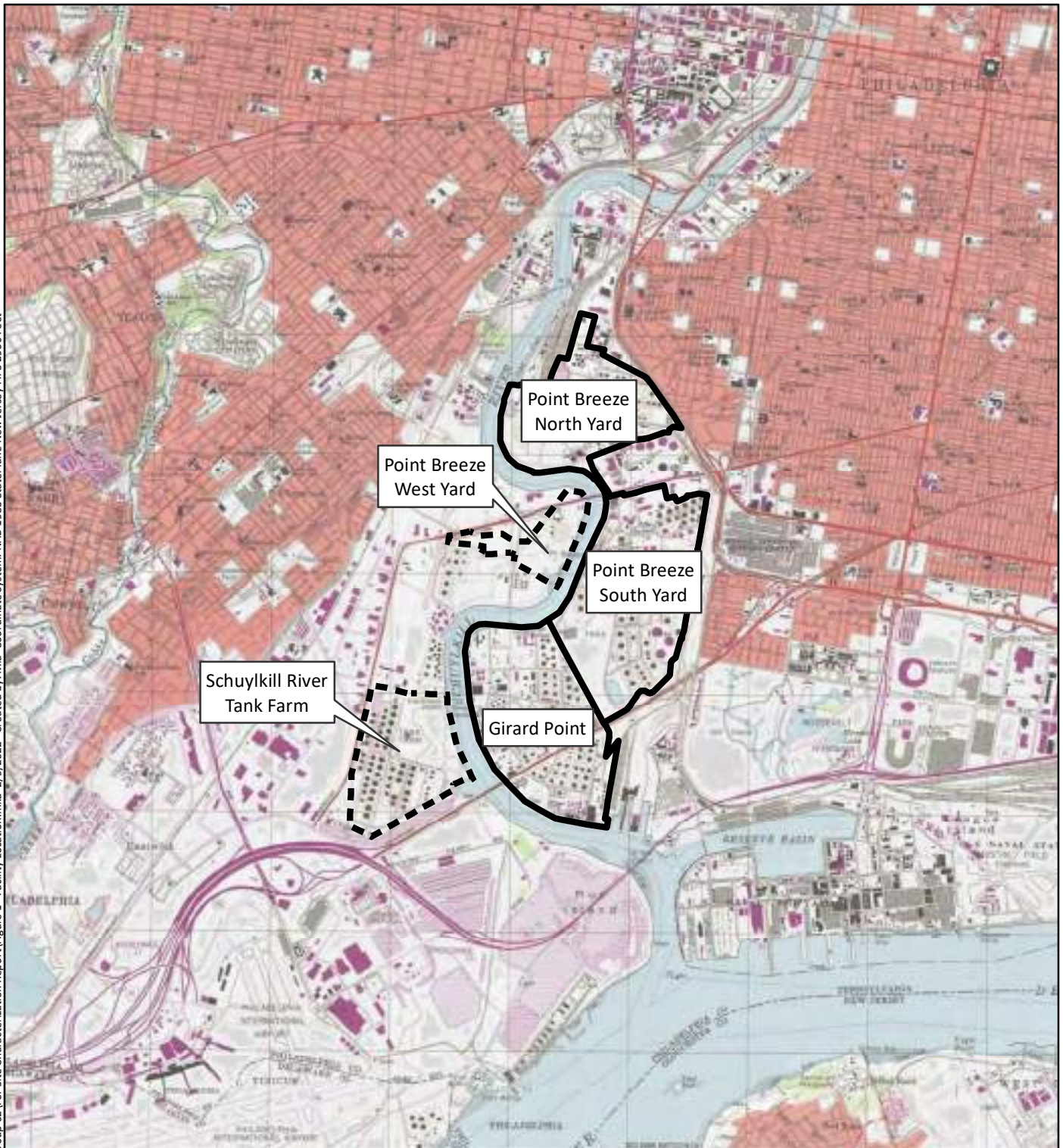
Meas Basis - measured basis; T = total, D = dissolved

Figures

- 1 Facility Location
- 2 Site Location Map
- 3 Site Layout, Tank Group 04
- 4a Historical Soil Sampling Results (Tank Group 04)
- 4b Historical Groundwater Sampling Results and NAPL (Tank Group 04)
- 5a Site Assessment Soil Sampling Locations (Tank Group 04)
- 5b Site Characterization Soil Sampling Locations (Tank Group 04)
- 5c Site Characterization Monitoring Well Locations (Tank Group 04)
- 6 Site Assessment, Site Characterization, and Historical Soil Sampling Results (Tank Group 04)
- 7a Soil Sampling Results, Tank Group 04 (1,2,4-Trimethylbenzene)
- 7b Soil Sampling Results, Tank Group 04 (Xylenes (total))
- 7c Soil Sampling Results, Tank Group 04 (Naphthalene)
- 7d Soil Sampling Results, Tank Group 04 (Lead)
- 8 Site Characterization Groundwater Results (Tank Group 04)
- 9 Groundwater Sampling Results, Tank Group 04 (Benzene)
- 10 Interpreted Potentiometric Surface (January 3, 2023)
- 11 Soil Risk Assessment Results (Tank Group 04)



File: N:\GIS\Prj\044.001_PESRM-PE\MXDS\AST\Work\Tank Group 02\For Site Characterization Report\Figure 1 - Facility Location.mxd 2/9/2022. Created by: Mia Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet



1 inch = 4,000 feet



Legend

- Subject to AST Closure Plan
- Not Subject to AST Closure Plan

Base Map: USGS Philadelphia 1994 7.5 Minute Quadrangle.

SAFETY FIRST



CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Facility Location

Figure 1

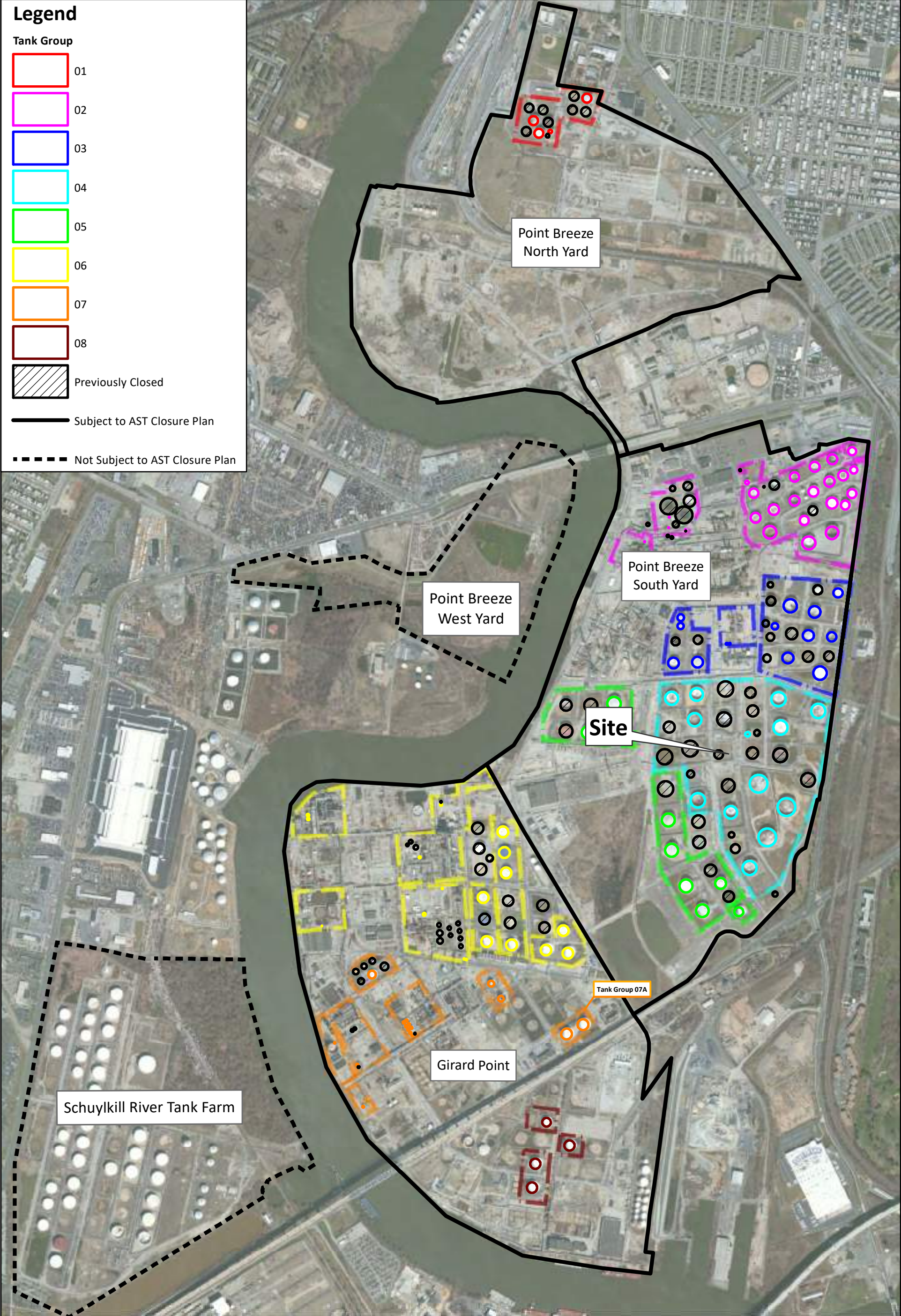
Legend

Tank Group

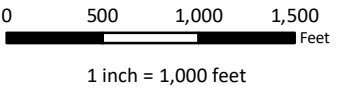
- 01
- 02
- 03
- 04
- 05
- 06
- 07
- 08
- Previously Closed

Subject to AST Closure Plan

Not Subject to AST Closure Plan



File: N:\GIS\PI\P044_001_PESRM-PES\WXDS\AST Work\Tank Group 04\For Site Characterization Report\Figure 2 - Site Location.mxd 2/5/2023 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Notes: Aerial imagery source Maxar 10/19/2019

SAFETY FIRST	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Site Location
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	Figure 2



File: N:\GIS\VP\0404_001_PESRM-PES\WXDS\AST Work\Tank Group 04\For Site Characterization Report\Figure 3 - Site Layout Map.mxd 8/11/2022 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Legend

Tank Group

- 04
- Previously Closed
- Subject to AST Closure Plan
- Associated Piping

Notes: Aerial imagery source Maxar 10/19/2019

0 105 210 315

Feet

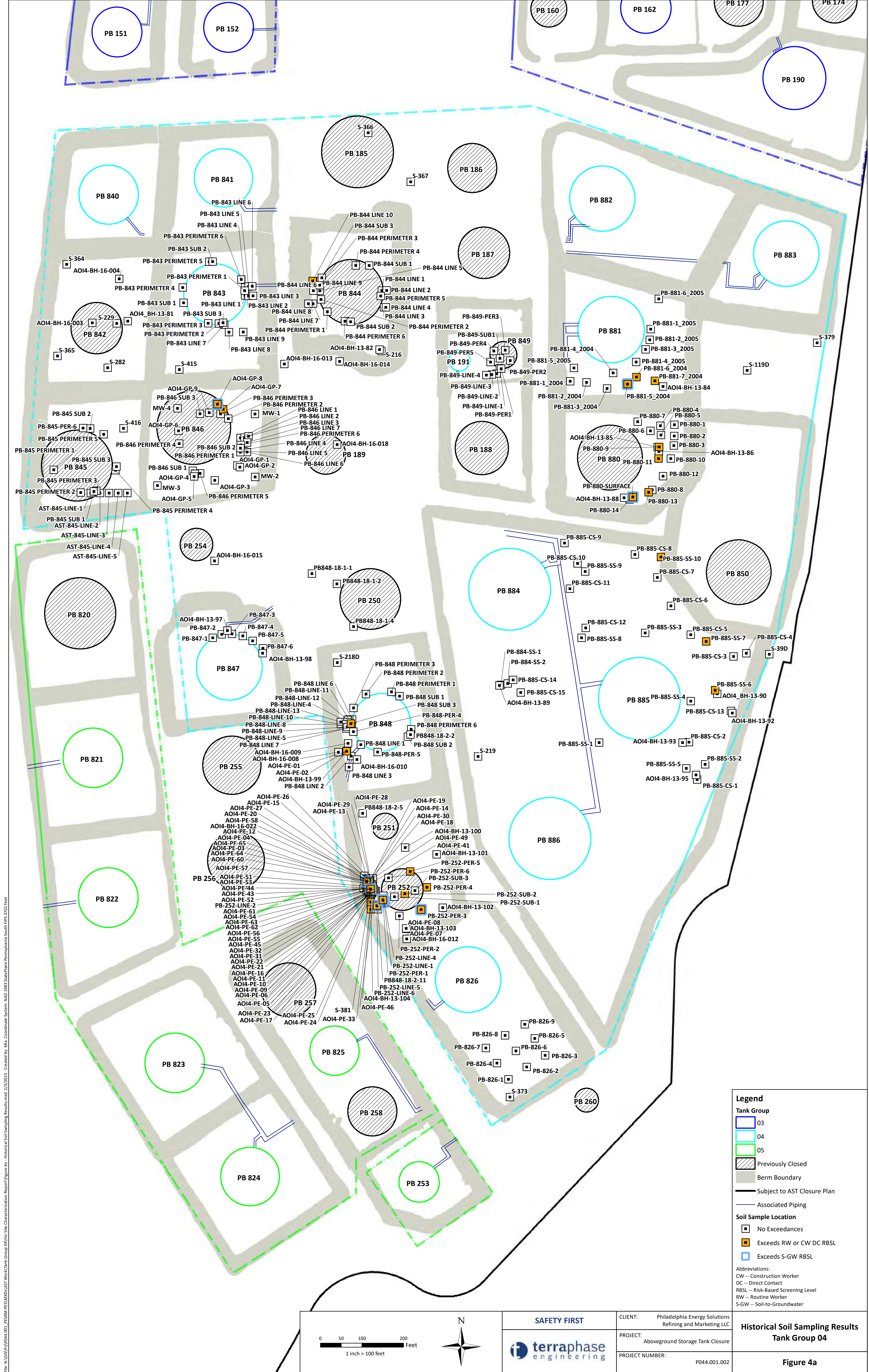
1 inch = 210 feet

SAFETY FIRST

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Aboveground Storage Tank Closure
PROJECT NUMBER:	P044.001.002

**Site Layout Map
Tank Group 04**

Figure 3



File: N:\GIS\Proj\0401_01_PESMA-PES\MD03\AST Work\Tank_Group 04\Fer_Site_Characterization_Report\Figure 4a - Historical Soil Sampling Results.mxd, 2/12/2023, Created by: Mia, Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3102 Feet

Legend

Tank Group

- 03
- 04
- 05
- Previously Closed
- Berm Boundary
- Subject to AST Closure Plan
- Associated Piping

Soil Sample Location

- No Exceedances
- Exceeds RW or CW DC RBSL
- Exceeds S-GW RBSL

Abbreviations:
 CW -- Construction Worker
 DC -- Direct Contact
 RBSL -- Risk-Based Screening Level
 RW -- Routine Worker
 S-GW -- Soil-to-Groundwater

0 50 100 200 Feet

1 inch = 100 feet

	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Historical Soil Sampling Results Tank Group 04 Figure 4a
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	



File: N:\GIS\SP\1044_001_PES\AW\AST\Work\Tank_Group_04\For_Size_Characterization\Report\Figure_4b_Historical_Groundwater_Sampling_Results_and_NAPL_mpl_2/1/2023_Created_by_MIA_Coordinate_System_MAD_1883_StatePlane_Pennsylvania_South_FPS_3702_Feet

Legend

- 03
- 04
- 05
- Previously Closed
- Berm Boundary
- Remediation System
- Subject to AST Closure Plan
- Associated Piping
- Estimated Extent of LNAPL as Documented in AOI 4 RIR
- Light Distillate
- Middle Distillate
- Heavy Distillate
- Mix of Light/Middle Distillate
- Historical Monitoring Well Location
- No Exceedances
- Exceeds GW RBSLs

Abbreviations:
 GW -- Groundwater
 RBSL -- Risk-Based Screening Level

0 50 100 200 Feet
 1 inch = 100 feet

SAFETY FIRST

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Historical Groundwater Sampling Results and NAPL Tank Group 04

Figure 4b

File: N:\GIS\Projects\0401_01_PESRM-PES\WDO3\AST Work\Tank_Group_04\Figures\Site_Assessment_Soil_Sampling_Locations.mxd 1/27/2023 Created by: Mia_Coordinato Pennsylvania South EPS 3702 Feet



Legend

- 03
- 04
- 05
- Previously Closed
- Berm Boundary
- Subject to AST Closure Plan
- Associated Piping
- PESRM Site Asssment
- Soil Sample Location

0 50 100 200 Feet

1 inch = 100 feet

SAFETY FIRST

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

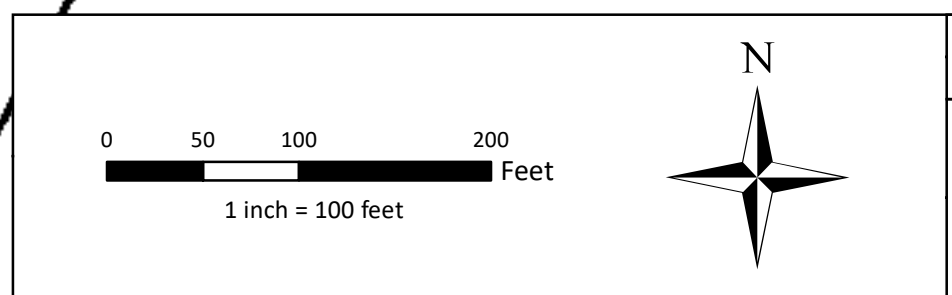
Site Assessment Soil Sampling Locations Tank Group 04

Figure 5a



File: N:\GIS\Proj\044.001_PESRM-PES\W003\AST Work\Tank_Group_04\Fac_Site_Characterization_Report\Figure 5b - Site Characterization Soil Sampling Locations.mxd 1/27/2023 Created by: MIA, Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Legend	
 	03
 	04
 	05
 	Previously Closed
 	Berm Boundary
	Subject to AST Closure Plan
	Associated Piping
○	PESRM Site Characterization Soil Sample Location



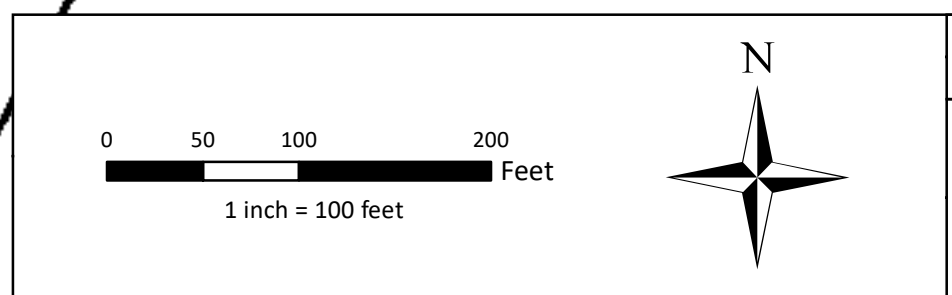
	CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT:	Aboveground Storage Tank Closure
	PROJECT NUMBER:	P044.001.002

Site Characterization Soil Sampling Locations Tank Group 04
Figure 5b

File: N:\GIS\Proj\044.001_PESRM-PES\WDO\AST\Work\Tank_Group\DTFor_Site_Characterization_Report\Figure 5c - Site Characterization Monitoring Well Locations.mxd 2/2/2023. Created by: Mia. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend	
Tank Group	
 	03
 	04
 	05
 	Previously Closed
 	Berm Boundary
	Subject to AST Closure Plan
—	Associated Piping
⊕	PESRM Site Characterization Monitoring Well Location
⊕	PESRM/Evergreen Site Characterization Monitoring Well Location

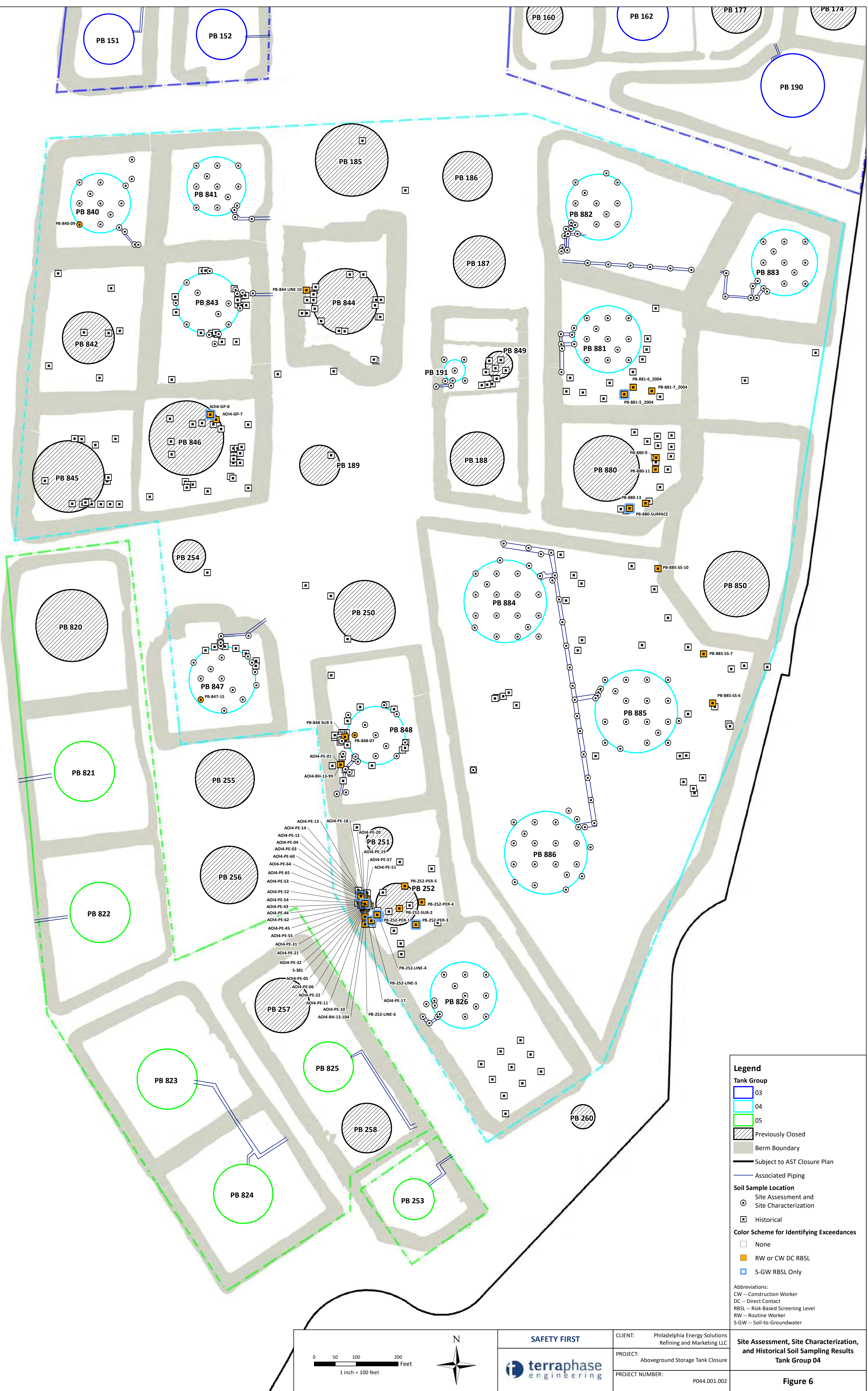


SAFETY FIRST	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT: Aboveground Storage Tank Closure
	PROJECT NUMBER: P044.001.002

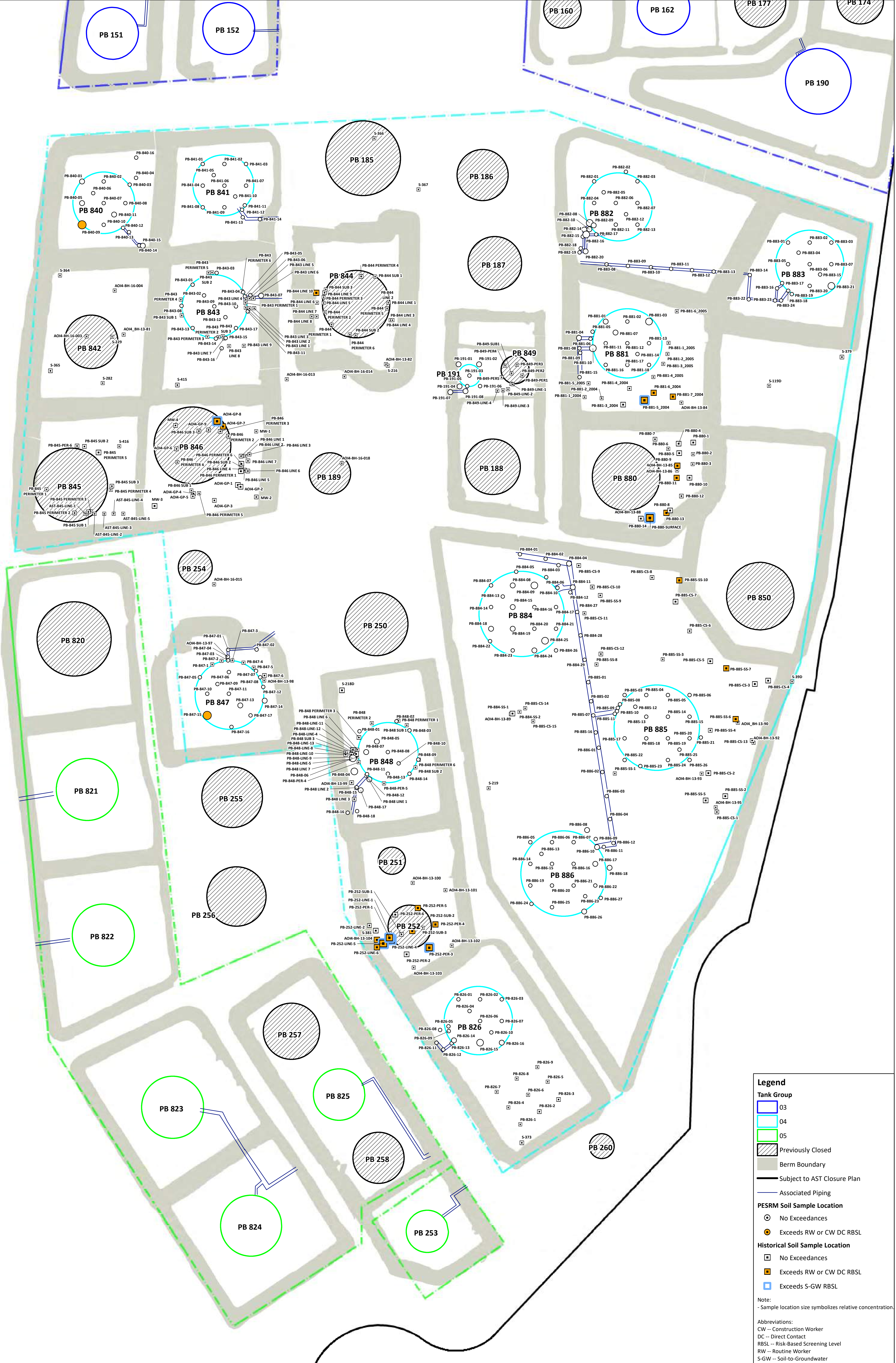
Site Characterization Monitoring Well Locations Tank Group 04

Figure 5c

File: N:\GIS\Proj\044_001_PESMA-PES\MDA\AST Work\Tank Group 04\Fig 6 - Site Characterization Report\Figure 6 - Soil Sampling Results.mxd 2/5/2023. Created by: Mia. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



File: N:\GIS\Projects\0401_001_PESRM-PESM\AST Work\Tank_Group_04\20230109_Size_Characterization - RBSL - withSurgreen_MarkResultsByChem_Nap.mxd 2/7/2023 Created by: Mia Coordinates System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

Tank Group

- 03
- 04
- 05
- Previously Closed
- Berm Boundary
- Subject to AST Closure Plan
- Associated Piping

PESRM Soil Sample Location

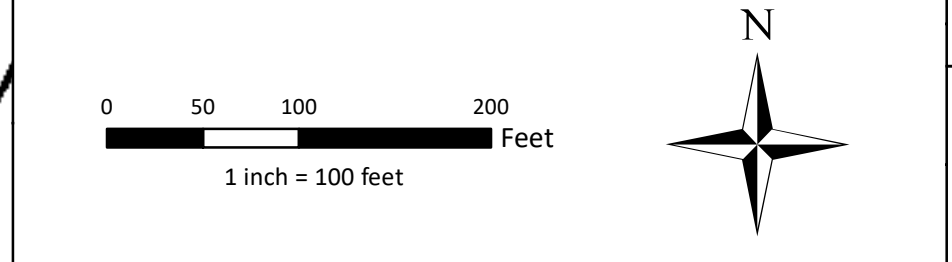
- No Exceedances
- Exceeds RW or CW DC RBSL

Historical Soil Sample Location

- No Exceedances
- Exceeds RW or CW DC RBSL
- Exceeds S-GW RBSL

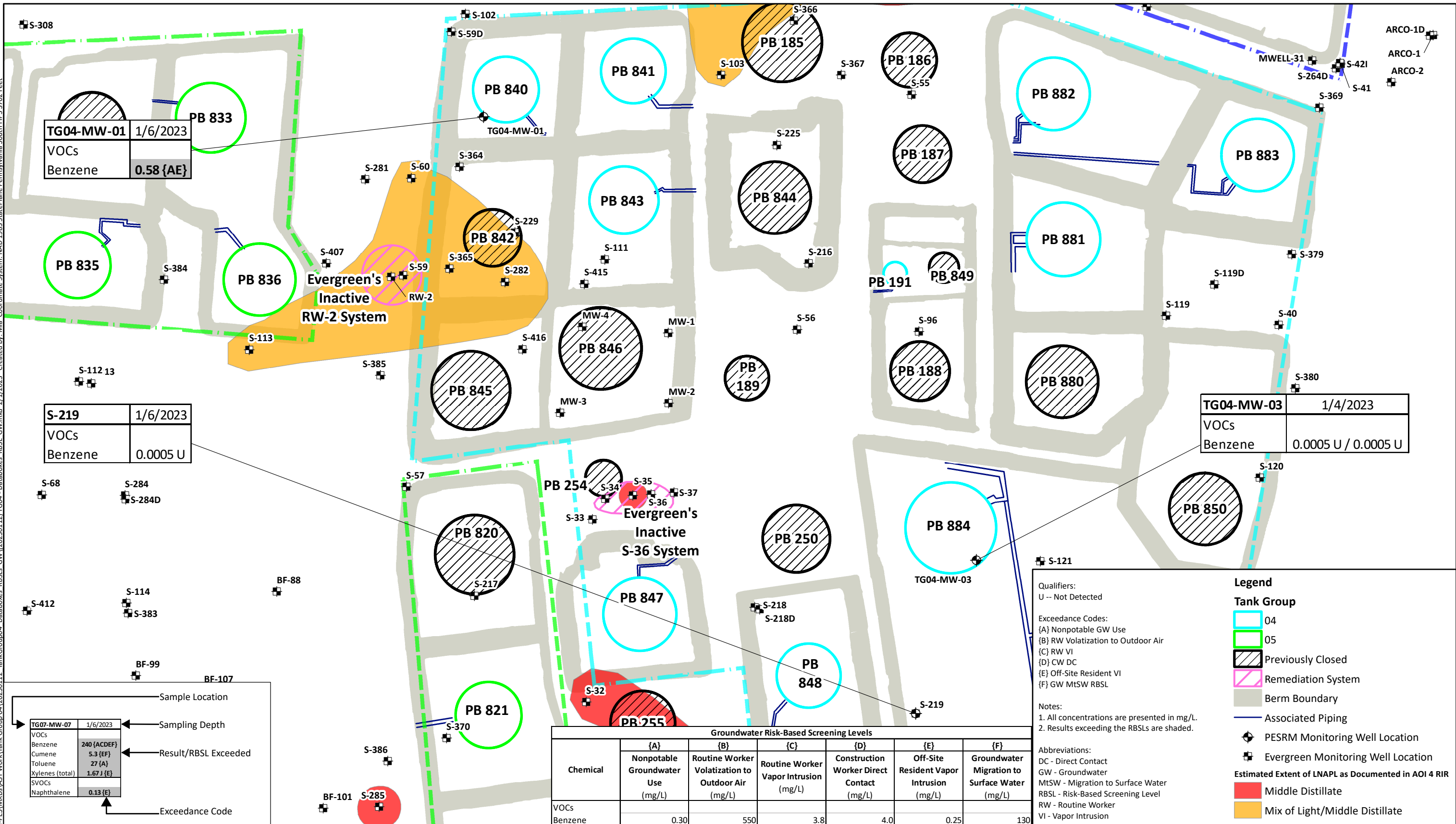
Note:
- Sample location size symbolizes relative concentration.

Abbreviations:
CW -- Construction Worker
DC -- Direct Contact
RBSL -- Risk-Based Screening Level
RW -- Routine Worker
S-GW -- Soil-to-Groundwater



	SAFETY FIRST	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Soil Sampling Results Tank Group 04 (Naphthalene) Figure 7c
		PROJECT: Aboveground Storage Tank Closure	
		PROJECT NUMBER: P044.001.002	

File: N:\GIS\PA\044.001_PESRM-PES\MXDs\AST_Work\TankGroup04\20230112_TankGroup04_Databases\RBSLs_GW\20230112_TG04 - Databases\RBSLs_GW.mxd 2/1/2023 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



TG04-MW-01	1/6/2023
VOCs	
Benzene	0.58 {AE}

S-219	1/6/2023
VOCs	
Benzene	0.0005 U

TG04-MW-03	1/4/2023
VOCs	
Benzene	0.0005 U / 0.0005 U

Sample Location	
TG07-MW-07	1/6/2023
Sampling Depth	
VOCs	240 {ACDEF}
Benzene	5.3 {EF}
Cumene	27 {A}
Toluene	1.67 {E}
Xylenes (total)	
SVOCs	
Naphthalene	0.13 {E}
Result/RBSL Exceeded	
Exceedance Code	

Chemical	Groundwater Risk-Based Screening Levels					
	{A}	{B}	{C}	{D}	{E}	{F}
VOCs						
Benzene	0.30	550	3.8	4.0	0.25	130

Qualifiers:
U -- Not Detected

Exceedance Codes:
{A} Nonpotable GW Use
{B} RW Volatilization to Outdoor Air
{C} RW VI
{D} CW DC
{E} Off-Site Resident VI
{F} GW MtSW RBSL

Notes:
1. All concentrations are presented in mg/L.
2. Results exceeding the RBSLs are shaded.

Abbreviations:
DC - Direct Contact
GW - Groundwater
MtSW - Migration to Surface Water
RBSL - Risk-Based Screening Level
RW - Routine Worker
VI - Vapor Intrusion

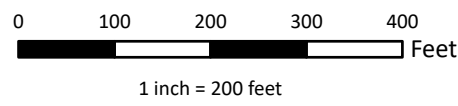
Legend

Tank Group

- 04
- 05
- Previously Closed
- Remediation System
- Berm Boundary
- Associated Piping
- PESRM Monitoring Well Location
- Evergreen Monitoring Well Location

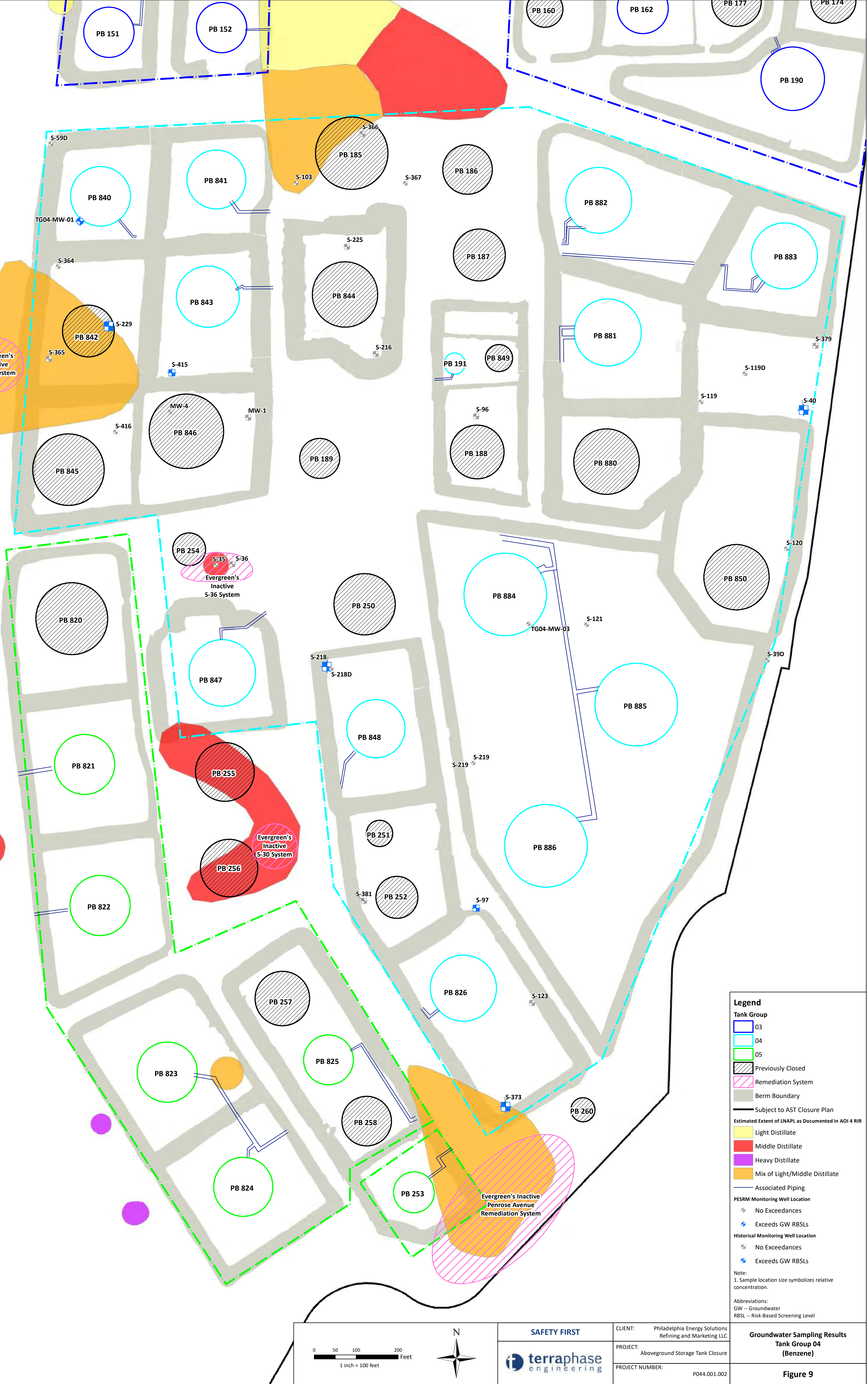
Estimated Extent of LNAPL as Documented in AOI 4 RIR

- Middle Distillate
- Mix of Light/Middle Distillate



	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Source Area Groundwater Results Tank Group 04 Figure 8
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	

File: N:\GIS\Proj\044_01_PESRM-PES\W003\AST Work\Tank Group 04\20230123_Size Characterization - RBSLs_withEvergreen_GW_MapsResults\Chem_Benzene.mxd 2/3/2023 Created by: Mia_Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

Tank Group

- 03
- 04
- 05
- Previously Closed
- Remediation System
- Berm Boundary
- Subject to AST Closure Plan

Estimated Extent of LNAPL as Documented in AOI 4 RIR

- Light Distillate
- Middle Distillate
- Heavy Distillate
- Mix of Light/Middle Distillate

Associated Piping

PESRM Monitoring Well Location

- No Exceedances
- Exceeds GW RBSLs

Historical Monitoring Well Location

- No Exceedances
- Exceeds GW RBSLs

Note:
1. Sample location size symbolizes relative concentration.

Abbreviations:
GW -- Groundwater
RBSL -- Risk-Based Screening Level

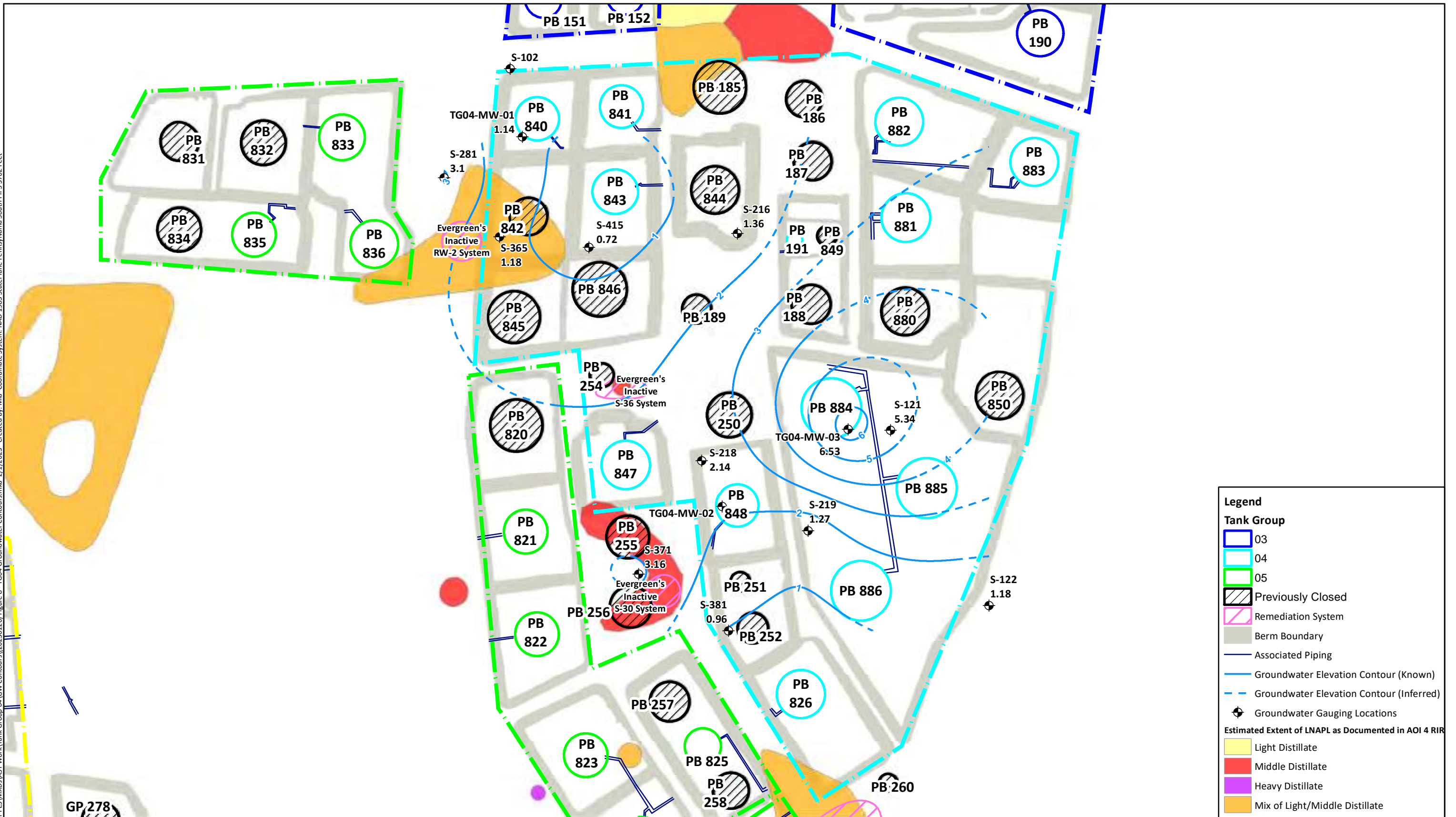
0 50 100 200 Feet
1 inch = 100 feet

SAFETY FIRST	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT: Aboveground Storage Tank Closure
	PROJECT NUMBER: P044.001.002

**Groundwater Sampling Results
Tank Group 04
(Benzene)**

Figure 9

File: N:\GIS\PI\P044_001_PESRM-PES\MXDS\AST\Work\Tank Group 04\GW Contours\20230120\Figure 8 - TG04 Groundwater Contours.mxd 2/1/2023 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

Tank Group

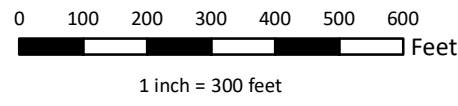
- 03
- 04
- 05
- Previously Closed
- Remediation System
- Berm Boundary
- Associated Piping
- Groundwater Elevation Contour (Known)
- Groundwater Elevation Contour (Inferred)
- Groundwater Gauging Locations

Estimated Extent of LNAPL as Documented in AOI 4 RIR

- Light Distillate
- Middle Distillate
- Heavy Distillate
- Mix of Light/Middle Distillate

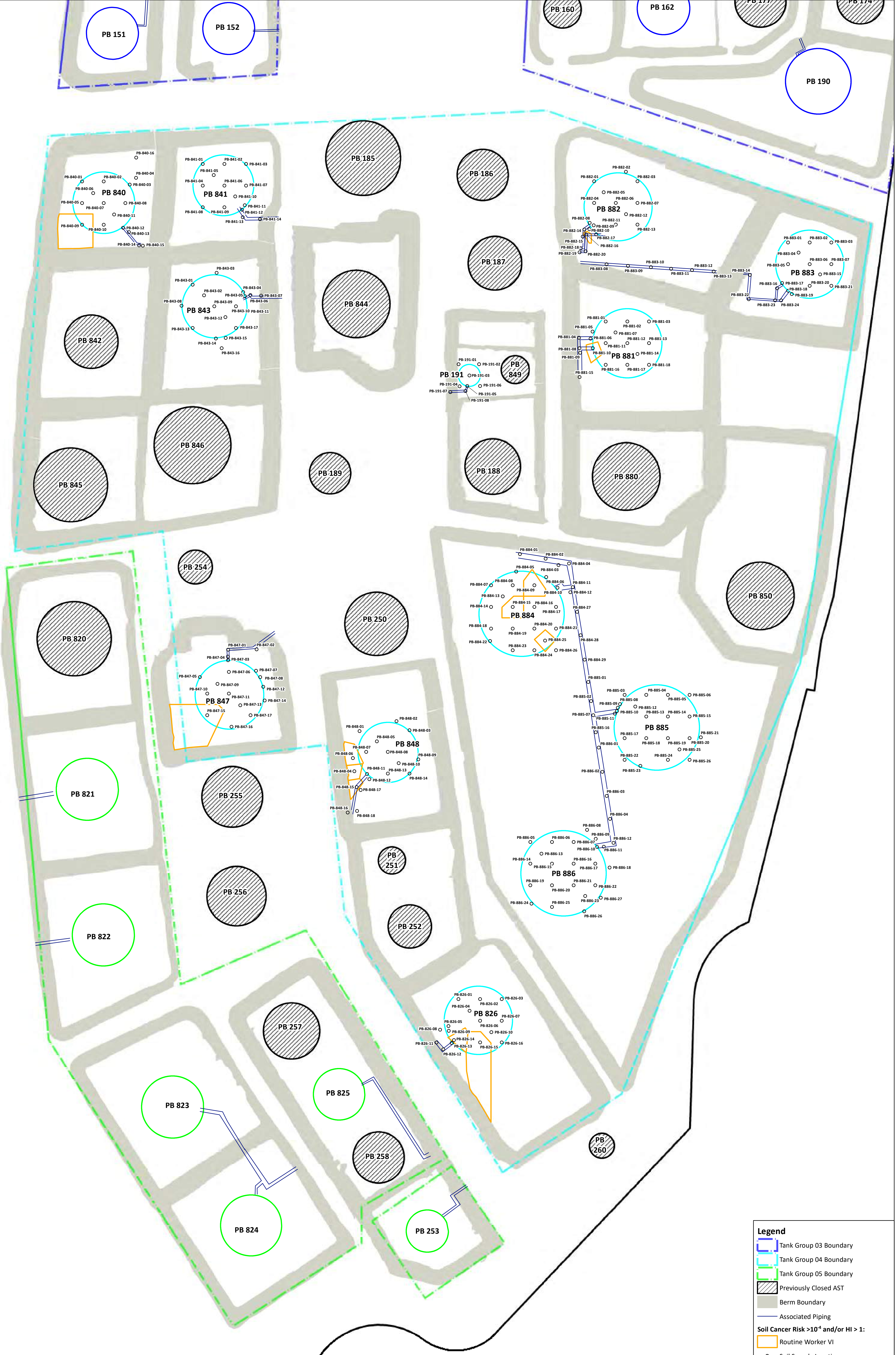
Note:

1. Groundwater elevation contour interval is 1.0 feet.
2. Corrected Depth to Water Levels factor an average LNAPL density of 0.82, where present.



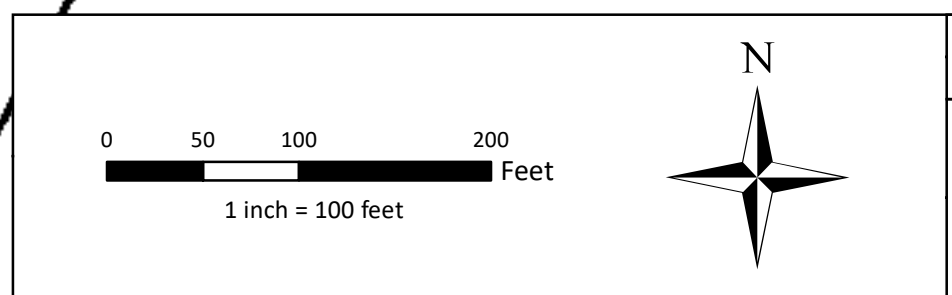
	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Interpreted Potentiometric Surface, January 3, 2023
	PROJECT: Aboveground Storage Tank Closure	
PROJECT NUMBER: P044.001.002	Figure 10	

File: N:\GIS\Projects\0404_001_PESMA-RES\AST Work\Tank Group 04\20230117_Bk_SQ\20230117_Figure 6 - Bk_Sq_Summary_1/19/2023_Created by: Mia_Coordinates System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

- Tank Group 03 Boundary
- Tank Group 04 Boundary
- Tank Group 05 Boundary
- Previously Closed AST
- Berm Boundary
- Associated Piping
- Soil Cancer Risk >10⁻⁴ and/or HI > 1:
- Routine Worker VI
- Soil Sample Location



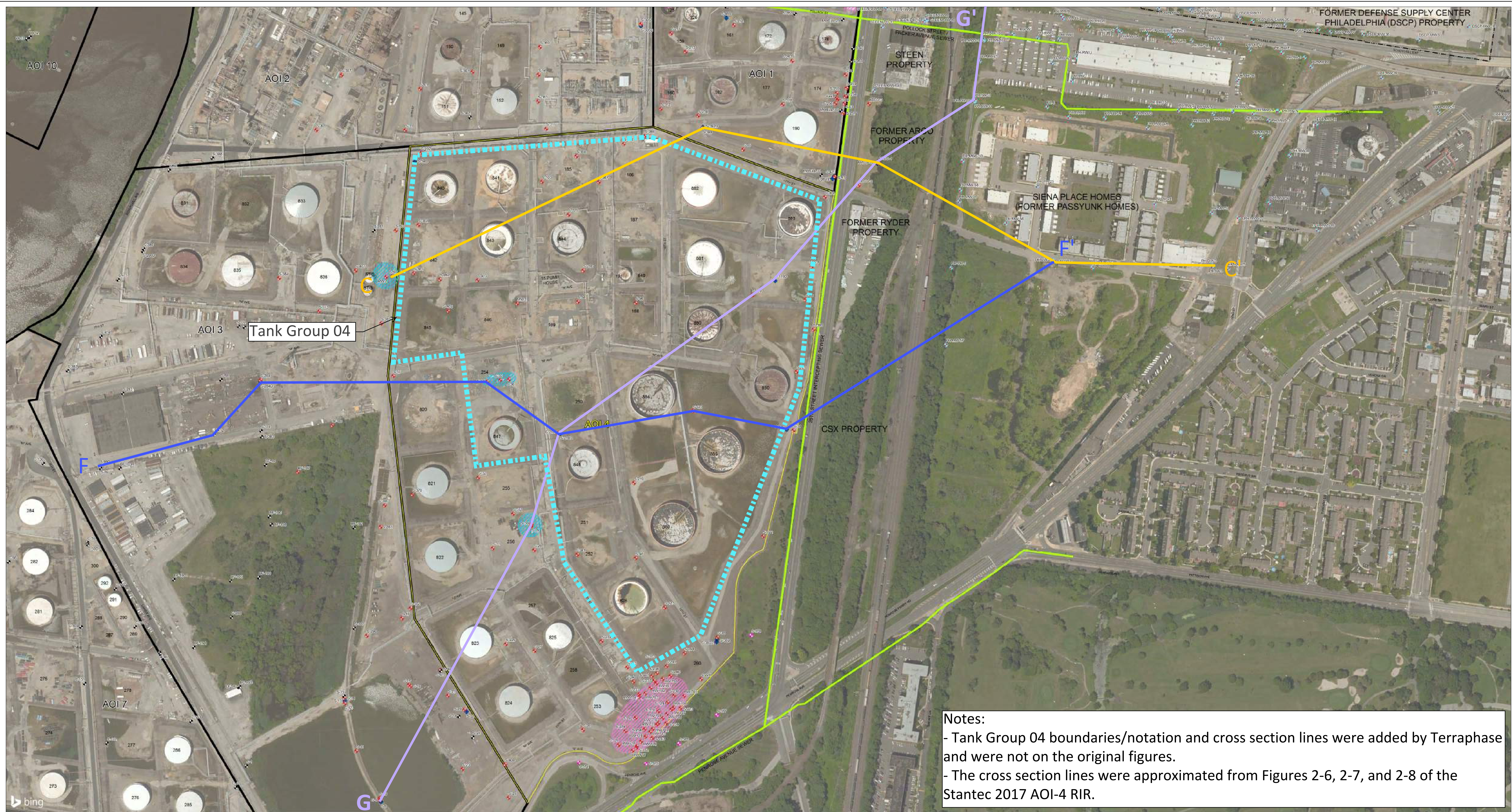
	CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT:	Aboveground Storage Tank Closure
	PROJECT NUMBER:	P044.001.002

Risk Assessment Results (Soil)
Tank Group 04
Figure 11

Appendix A

Select Figures from the AOI 4 RIR



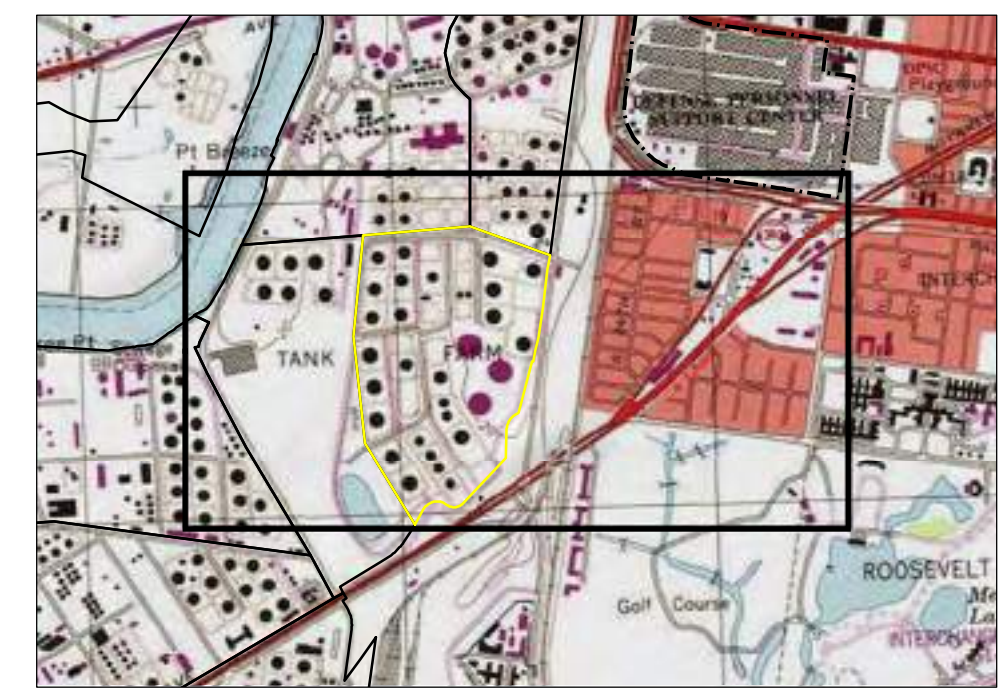
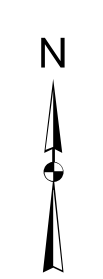
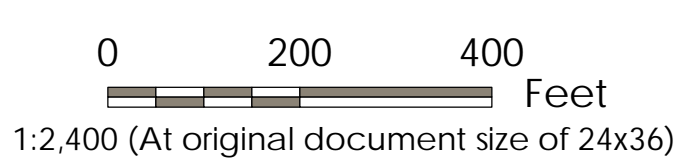


Notes:
 - Tank Group 04 boundaries/notation and cross section lines were added by Terraphase and were not on the original figures.
 - The cross section lines were approximated from Figures 2-6, 2-7, and 2-8 of the Stantec 2017 AOI-4 RIR.



Legend

- OFFSITE MONITORING WELL - FORMER DSCP, PASSYUNK HOMES, STEEN, AND CSX PROPERTIES
- FACILITY MONITORING WELL (AREAS OUTSIDE OF AOI 4)
- PROPOSED MONITORING WELL
- AOI 4 MONITORING WELL (INCLUDING A PORTION OF OFFSITE WELLS MONITORED BY STANTEC)
- HYDROSTRATIGRAPHIC UNIT
- UNCONFINED AQUIFER
- LOWER AQUIFER
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- REMEDIATION SYSTEMS DESIGNATED AS CURRENTLY ACTIVE
- REMEDIATION SYSTEMS DESIGNATED AS INACTIVE
- AREA OF INTEREST (AOI)
- AOI 4
- FORMER DEFENSE SUPPLY CENTER PHILADELPHIA (DSCP) PROPERTY



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

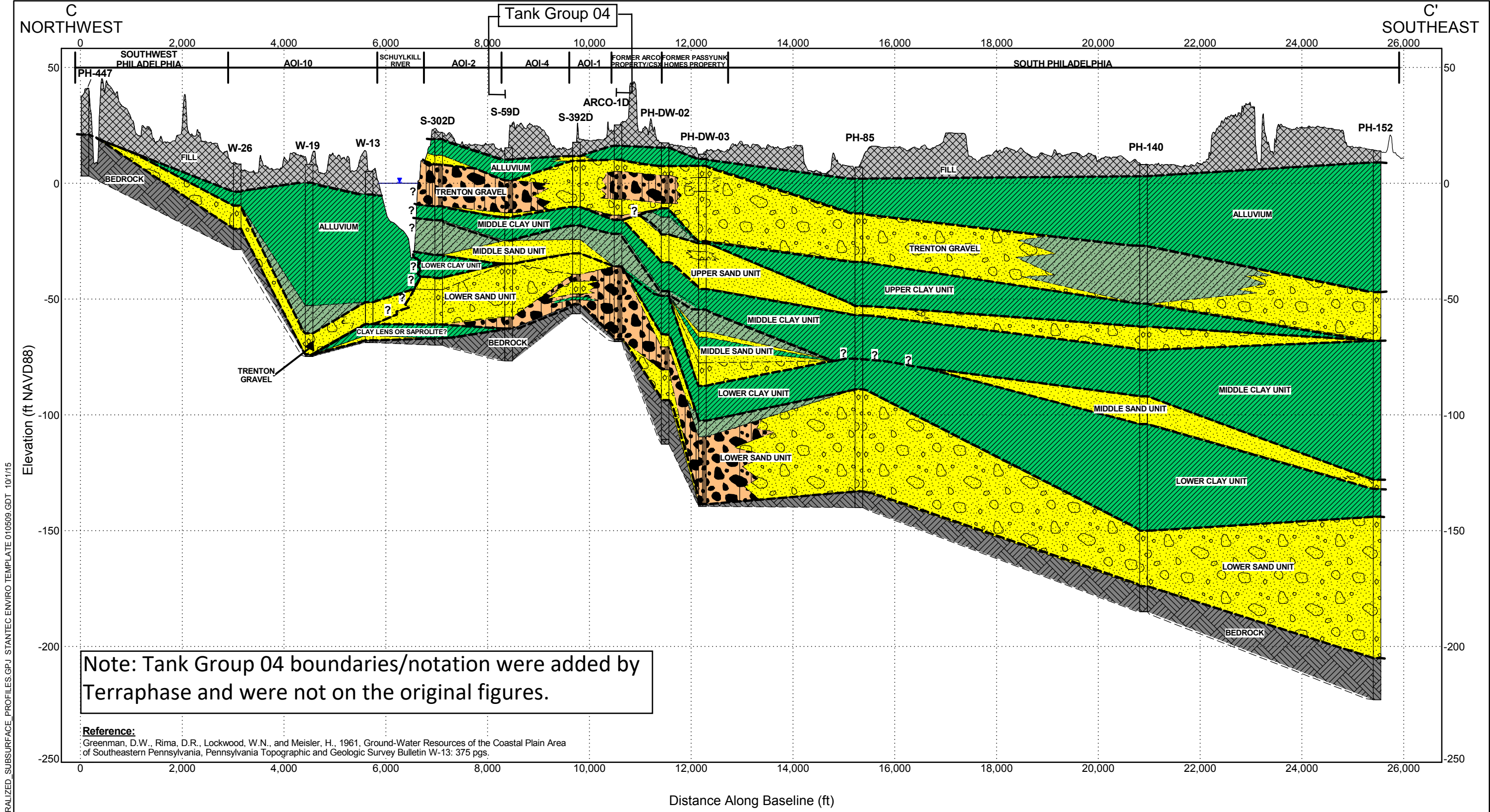
Figure No.
 1-2

Title
 AOI 4 SITE PLAN

213402602
 Prepared by GWC on 1/27/2017
 Technical Review by ADK on 1/31/2017
 Independent Review by JLM on 1/31/2017

Notes
 1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
 2. Data Sources: Stantec and Defense Logistics Agency (DLA)
 3. Aerial & Topo Image courtesy of USGS Earthstar Geographics. SIO © 2017 Microsoft Corporation. Copyright © 2013 National Geographic Society. I-cubed Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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STRAT COLUMN SMALL_AOI1_GENERALIZED_SURFACE_PROFILES.GPJ_STANTEC_ENVIRO TEMPLATE 010509.GDT 10/1/15



GENERALIZED LITHOLOGY GRAPHICS

Apparent Fill	Sand (incl. trace to silt/clay/gravel)	"Mud" (silt/clay, incl. trace to little sand/gravel)
Sandy Gravel	"Muddy" Sand	Bedrock (incl. saprolite where indicated)
Gravelly Sand		

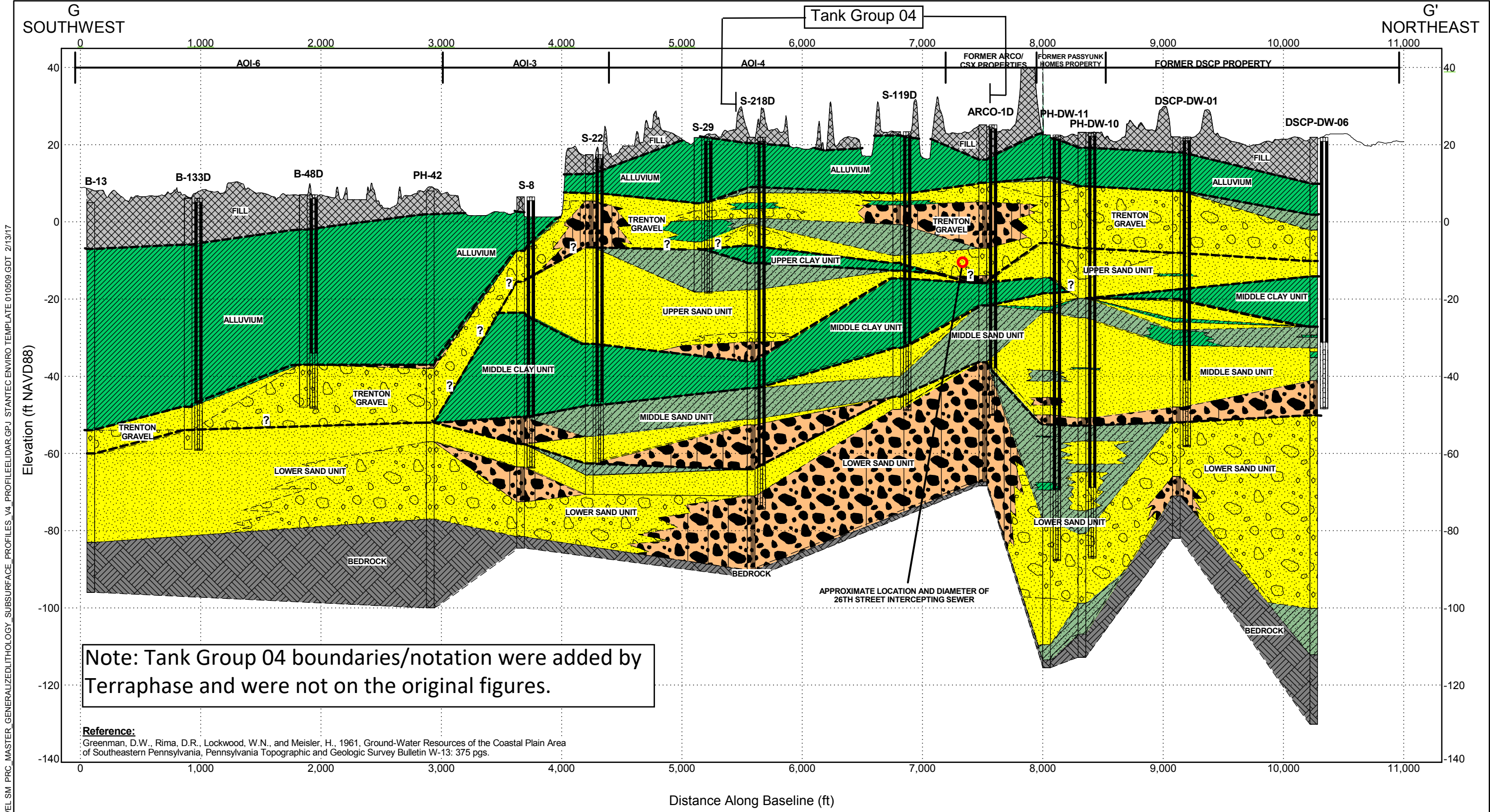
Notes:

1. Land surface profile obtained from a 2010 light detection and ranging (LIDAR) elevation model available from the United States Geological Survey (USGS).
2. Lithologic logs for borings PH-85, PH-140, PH-152, and PH-447 were obtained from Tables 13 and 14 of Greenman et al., 1961. Geographic locations for those borings were digitized on-screen by Stantec using a georeferenced image of Greenman et al., 1961, Plate 1.
3. Water depths for the Schuylkill River were estimated using soundings provided on the National Oceanic and Atmospheric Administration (NOAA) navigation chart for the Delaware River, Philadelphia and Camden Waterfronts (Chart 12313). Mean lower low water (MLLW) depths were transformed to the North American Vertical Datum of 1988 (NAVD 88).
4. Stantec generalized lithologic data from available borehole logs into 8 categories as indicated for interpretive purposes. "Mud" is utilized in these profiles to generally represent clay/silt mixtures, or clay and silt-rich sandy sediments.
5. Correlation between lithologies and, where applicable, geologic units is based on the straight-line method. Actual conditions between boreholes may vary from what is shown on this profile. Contacts dashed where inferred.
6. Vertical Exaggeration - 45 X

Figure 2-6. Stratigraphic Profile C - C'

Philadelphia Refinery Operations
a series of Evergreen Resources Group, LLC
3144 Passyunk Avenue
Philadelphia, PA 19145

Project Number: 213402602



STRAT COLUMN WELL AND WAT LEVEL SM_PRC_MASTER_GENERALIZEDLITHOLOGY_SUBSURFACE_PROFILES_V4_PROFILELIDAR.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 2/13/17



GENERALIZED LITHOLOGY GRAPHICS

Apparent Fill	Sand (incl. trace to silt/clay/gravel)	"Mud" (silt/clay, incl. trace to little sand/gravel)
Sandy Gravel	"Muddy" Sand	Bedrock (incl. saprolite where indicated)
Gravelly Sand		

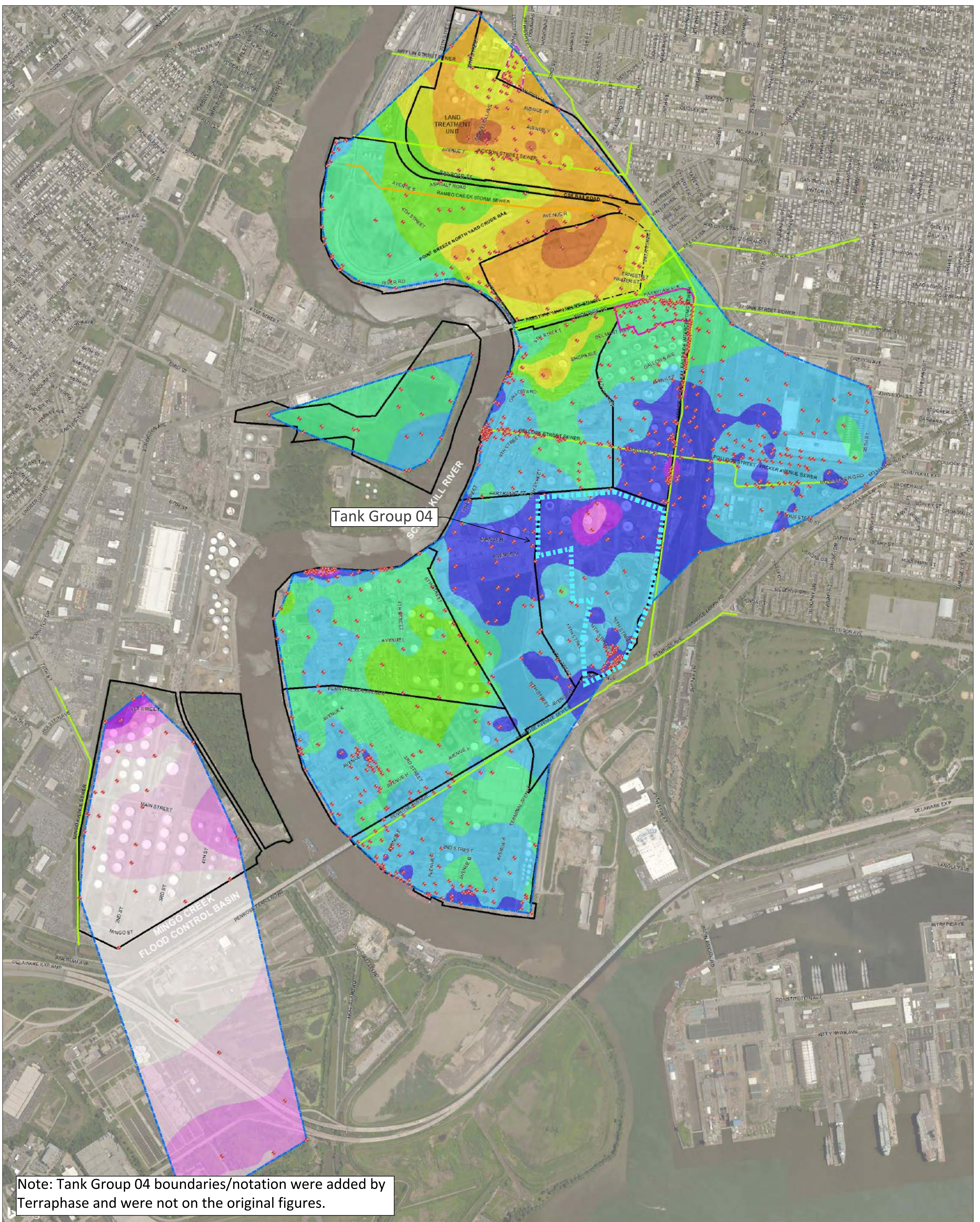
Notes:

1. Land surface profile obtained from a 2010 light detection and ranging (LIDAR) elevation model available from the United States Geological Survey (USGS).
2. Lithologic logs for borings B-13 and PH-42 were obtained from Tables 13 and 14 of Greenman et al., 1961. Geographic locations for those borings were digitized on-screen by Stantec using a georeferenced image of Greenman et al., 1961, Plate 1.
3. Stantec generalized lithologic data from available borehole logs into 8 categories as indicated for interpretive purposes. "Mud" is utilized in these profiles to generally represent clay/silt mixtures, or clay and silt-rich sandy sediments.
4. Correlation between lithologies and, where applicable, geologic units is based on the straight-line method. Actual conditions between boreholes may vary from what is shown on this profile. Contacts are dashed (inferred).
5. Vertical Exaggeration ~ 32 X

Figure 2-8. Stratigraphic Profile G - G'

Philadelphia Refinery Operations
a series of Evergreen Resources Group, LLC
3144 Passyunk Avenue
Philadelphia, PA 19145

Project Number: 213402602



Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



- LEGEND**
- ♦ WELL UTILIZED FOR THE JUNE 2018 WATER-TABLE ELEVATION SURFACE
 - APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
 - APPROXIMATE LOCATION OF RAMBO CREEK STORM SEWER
 - PHILADELPHIA GAS WORKS (PGW) PASSYUNK FACILITY
 - VERIZON SOUTH DISTRICT WORK CENTER (SDWC) PROPERTY
 - AREA OF INTEREST (AOI) BOUNDARY
 - BELMONT TERMINAL
 - APPROXIMATE LIMITS OF WATER-TABLE WELL CONTROL

JUNE 2018 WATER-TABLE ELEVATION
FT NAVD88

14 - 16
12 - 14
10 - 12
8 - 10
6 - 8
4 - 6
2 - 4
0 - 2
-2 - 0
-4 - -2
-6 - -4
-8 - -6
-10 - -8

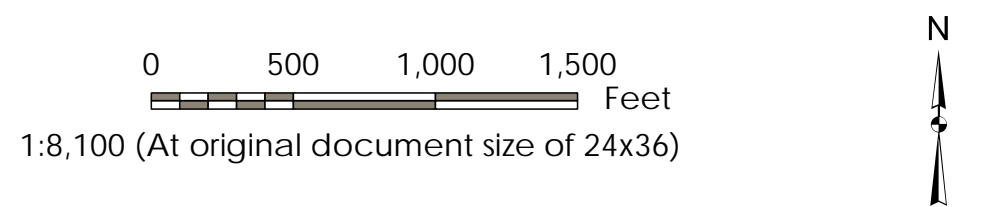


Figure No. 3-29
Title JUNE 2018 WATER-TABLE ELEVATION

Client/Project PHILADELPHIA REFINERY OPERATIONS, A SERIES OF EVERGREEN RESOURCES GROUP, LLC FORMER PHILADELPHIA REFINERY 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Project Location Philadelphia, Philadelphia County, Pennsylvania
Prepared by ADK on 8/14/2018
Technical Review by ANP on 9/20/2018
Independent Review by JLM on 10/19/2018

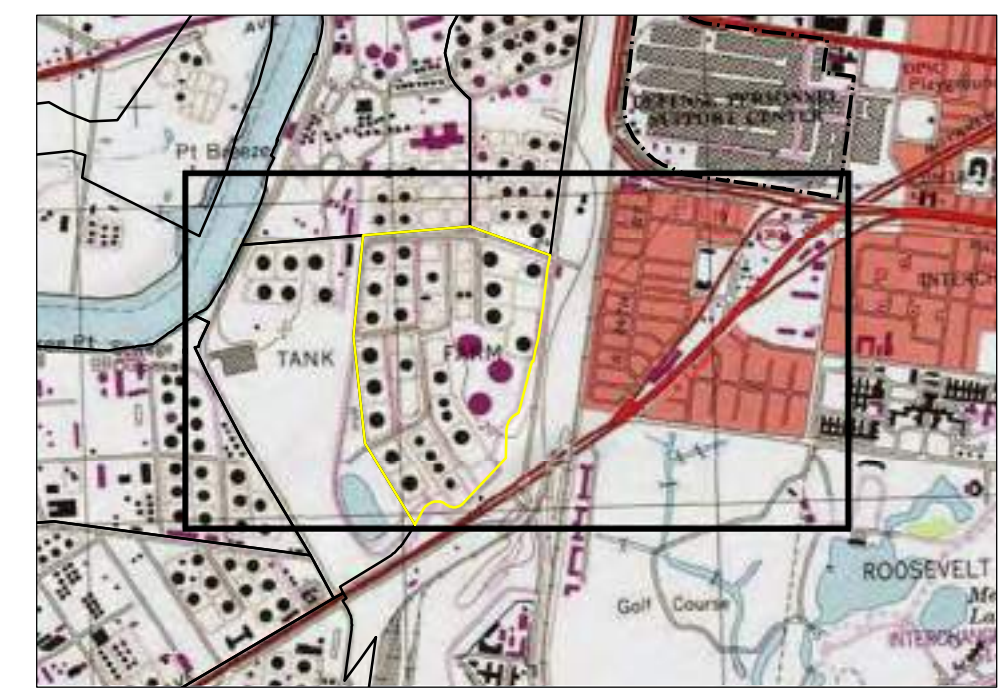
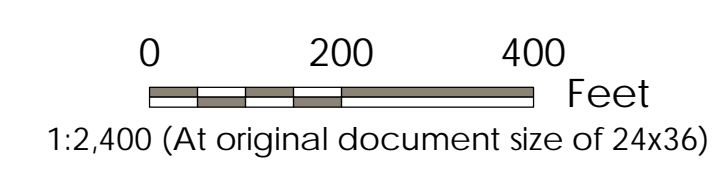




- Legend**
- ◆ 2016 Well Gauging Data - Unconfined Aquifer
 - 2016 WATER-TABLE ELEVATION (ft NAVD 88)
 - APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
 - LIMITS OF UNCONFINED AQUIFER WELL CONTROL
 - AREA OF INTEREST (AOI)
 - AOI 4
 - FORMER DSCP PROPERTY
 - NOT MEASURED
 - WELLS NOT USED FOR GROUNDWATER CONTOURING
 - 1.46' GROUNDWATER ELEVATION (FEET NAVD 88)

Notes

- Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
- Sources: Stantec and Defense Logistics Agency (DLA)
- Labels denote groundwater elevation in feet. Depth to groundwater was measured in each well to the nearest one-hundredth of a foot using an interface probe.
- Contour Interval = 0.5 feet
- Gauging data for DSCP property wells obtained from the DLA. Rigorous evaluation of that data not performed by Stantec.
- Groundwater elevation data was interpolated using block kriging with a linear variogram model in Surfer.
- Aerial & Topo: Service Layer Credits: Image courtesy of USGS Earthstar Geographics. SIO © 2017 Microsoft Corporation. Copyright © 2013 National Geographic Society, I-cubed. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.



Project Location
 City of Philadelphia, Philadelphia County, Pennsylvania

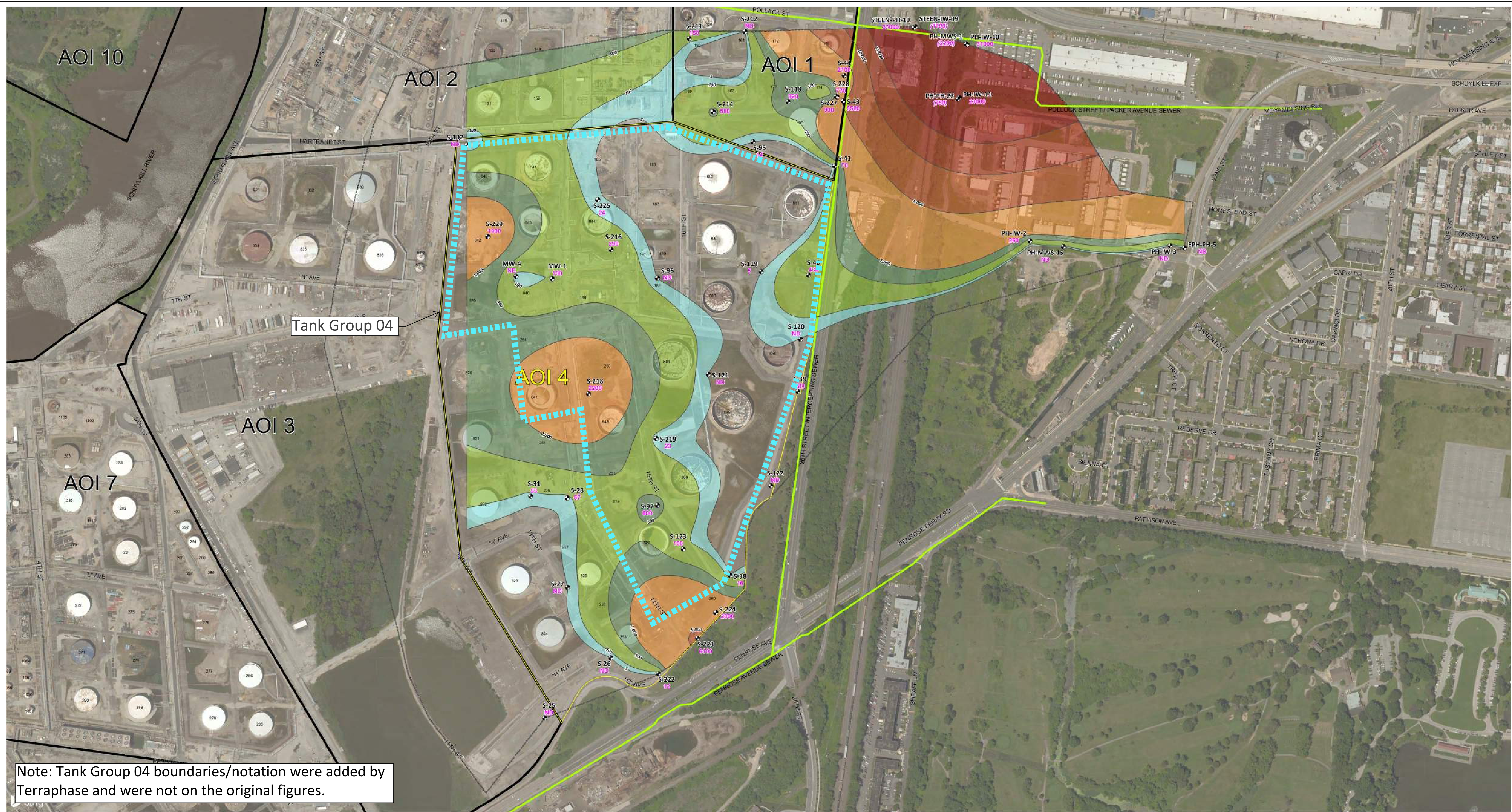
Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF EVERGREEN RESOURCES GROUP, LLC PHILADELPHIA REFINING COMPLEX 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
 5-4

Title
 MAY 2016 WATER-TABLE ELEVATION - INCLUDING SYNOPSIS DSCP GAUGING DATA

213402602
 Prepared by GWC on 1/12/2017
 Technical Review by ADK on 2/23/2017
 Independent Review by JKD on 3/6/2017

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Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.

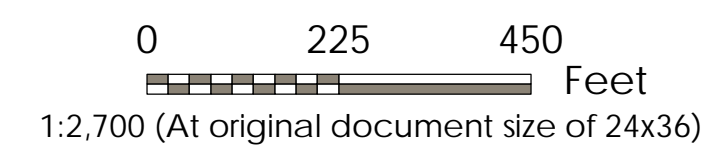


Legend

- MONITORING/RECOVERY WELL
- 2004/2005 BENZENE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- AREA OF INTEREST (AOI)
- AOI 4
- CROPPED GRID EXTENT
- MAXIMUM CONCENTRATION OF BENZENE (ug/L)
- ND NOT DETECTED
- WELLS NOT USED FOR CONTOURING

BENZENE (MICROGRAMS PER LITER (ug/L))

- 5 (STATEWIDE HEALTH STANDARD) - 100
- 100 - 500
- 500 - 1,000
- 1,000 - 5,000
- 5,000 - 10,000
- 10,000 - 15,000
- > 15,000



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

213402602
 Prepared by GWC on 1/7/2017
 Technical Review by ADK on 3/9/2017
 Independent Review by JKD on 3/9/2017

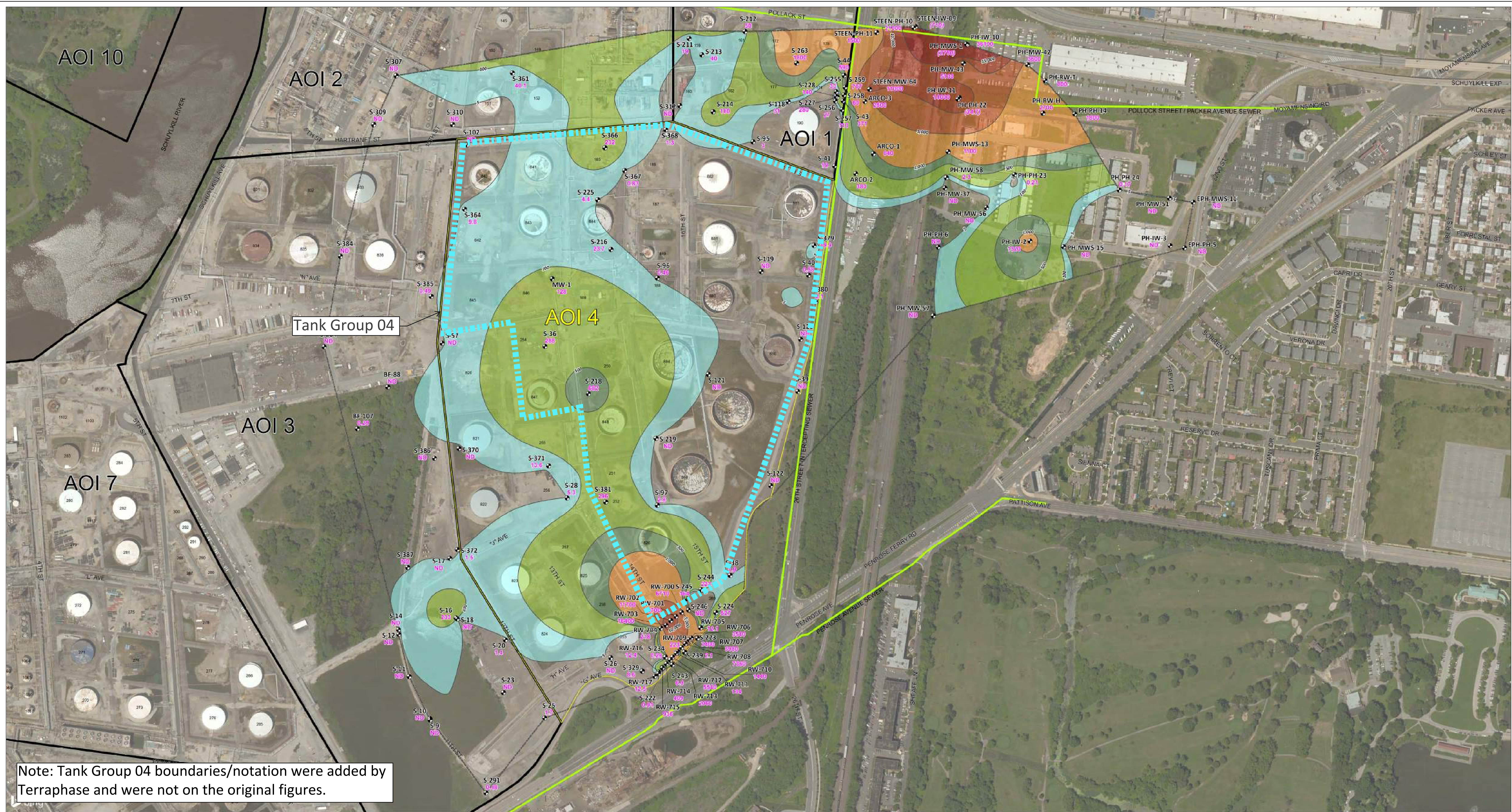
Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
10-1

Title
**UNCONFINED AQUIFER BENZENE MAXIMUM
 CONCENTRATION - 2004 TO 2005 DATA**

Notes
 1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
 2. Sources: Stantec
 3. Labels denote well identifier and benzene concentration in micrograms per liter (ug/L)
 4. COC analytical data was interpolated using the Natural Neighbor gridding method in Surfer.
 5. Aerial & Topo Image courtesy of USGS Earthstar Geographics. © 2017 Microsoft Corporation
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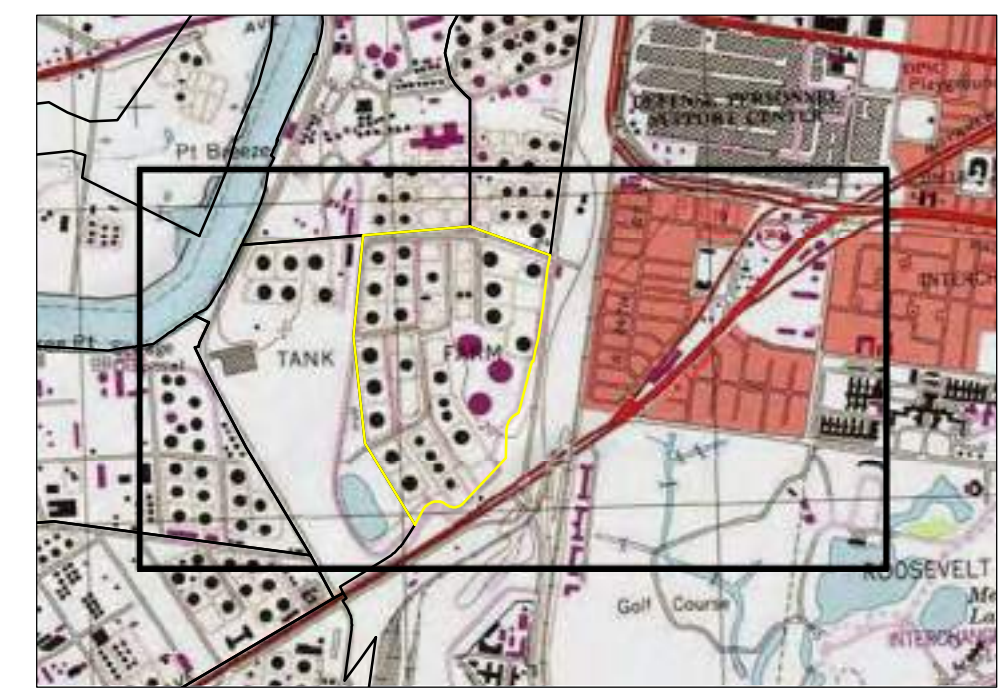
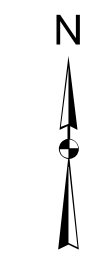
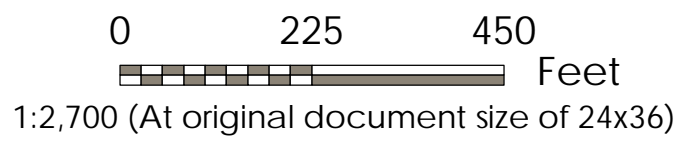
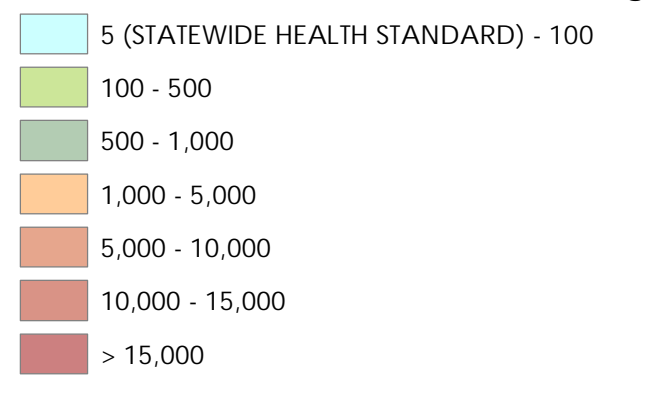
Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



Legend

- MONITORING/RECOVERY WELL
- 2012/2013 BENZENE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- AREA OF INTEREST (AOI)
- AOI 4
- CROPPED GRID EXTENT
- 0.48 MAXIMUM CONCENTRATION OF BENZENE (ug/L)
- ND NOT DETECTED
- STEEN-MW-09 WELLS NOT USED FOR CONTOURING

BENZENE (MICROGRAMS PER LITER (ug/L))



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

213402602
 Prepared by GWC on 1/7/2017
 Technical Review by ADK on 3/9/2017
 Independent Review by JKD on 3/9/2017

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
 10-2

Title
 UNCONFINED AQUIFER BENZENE MAXIMUM
 CONCENTRATION - 2012 TO 2013 DATA

Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
2. Sources: Stantec
3. Labels denote well identifier and benzene concentration in micrograms per liter (ug/L)
4. COC analytical data was interpolated using the Natural Neighbor gridding method in Surfer.
5. Aerial & Topo Image courtesy of USGS Earthstar Geographics. © 2017 Microsoft Corporation. Copyright: © 2013 National Geographic Society. i-cubed Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.

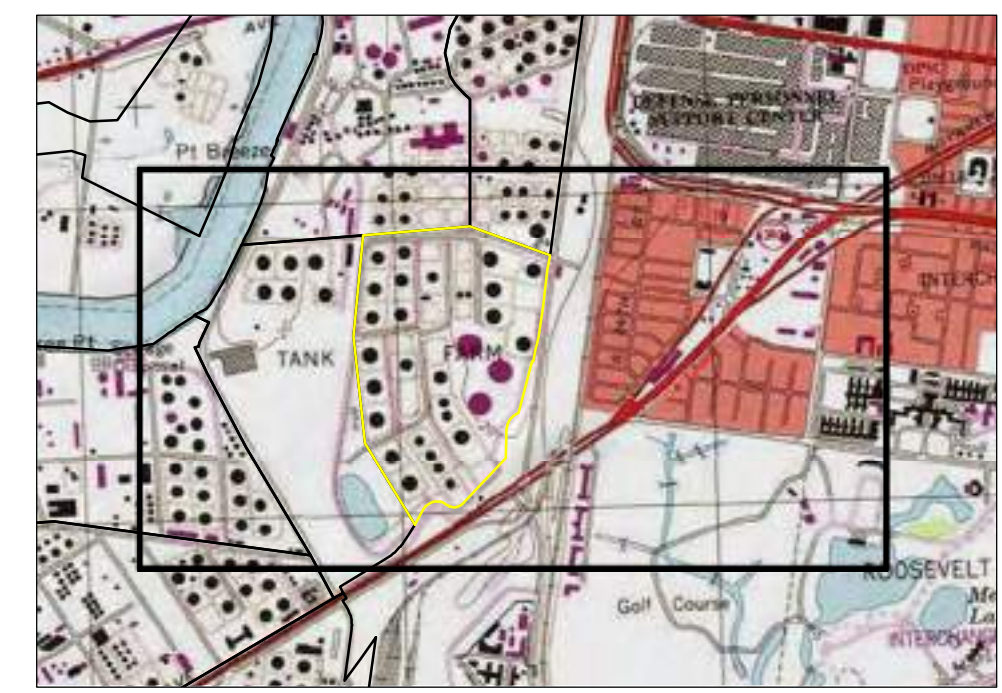
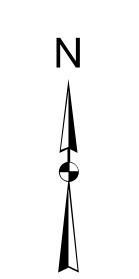
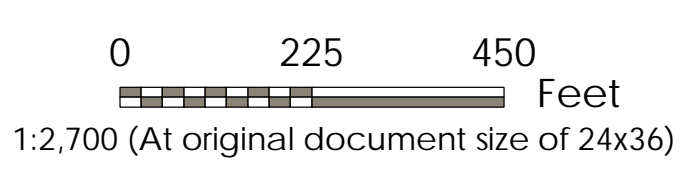


Legend

- MONITORING/RECOVERY WELL
- 2004/2005 MTBE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- AREA OF INTEREST (AOI)
- AOI 4
- CROPPED GRID EXTENT
- MAXIMUM CONCENTRATION OF MTBE [ug/L]
- NOT DETECTED
- WELLS NOT USED FOR CONTOURING

METHYL-TERTIARY BUTYL ETHER (MICROGRAMS PER LITER (ug/L))

- 20 (STATEWIDE HEALTH STANDARD) - 200
- 200 - 2,000



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

213402602
 Prepared by GWC on 1/7/2017
 Technical Review by ADK on 3/9/2017
 Independent Review by JKD on 3/9/2017

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
 10-4

Title
 UNCONFINED AQUIFER MTBE MAXIMUM
 CONCENTRATION - 2004 TO 2005 DATA

Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
2. Sources: Stantec
3. Labels denote well identifier and MTBE concentration in micrograms per liter (ug/L).
4. CIG - analytical data was interpolated using the Natural Neighbor gridding method in Surfer.
5. MTBE = methyl tertiary butyl ether
6. Aerial & Topo Image courtesy of USGS Earthstar Geographics. SIO © 2017 Microsoft Corporation. Copyright © 2013 National Geographic Society. I-cubed Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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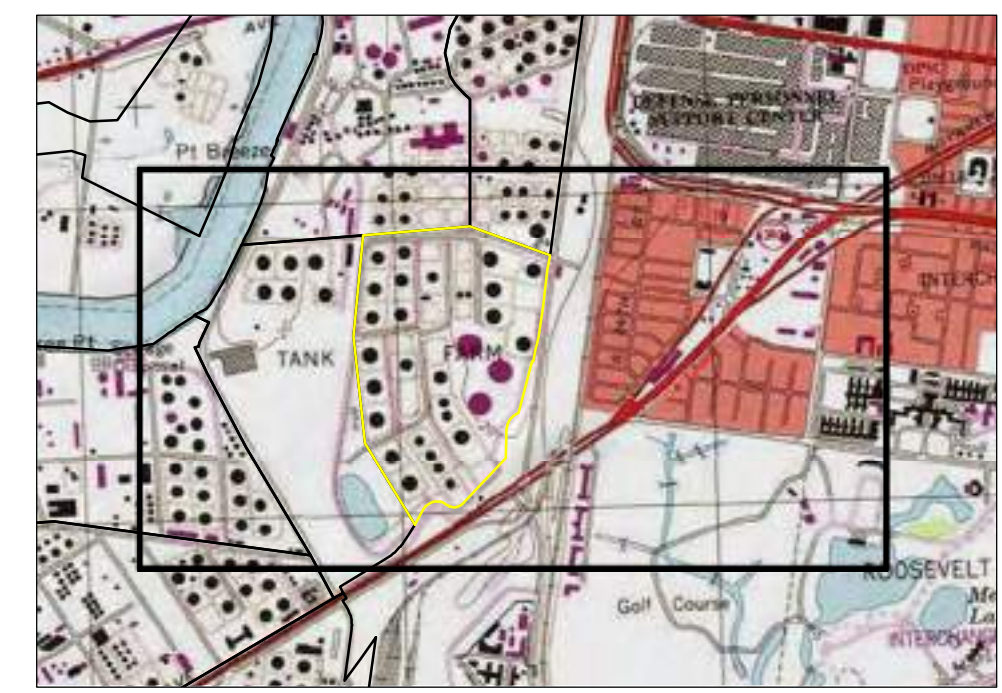
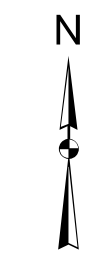
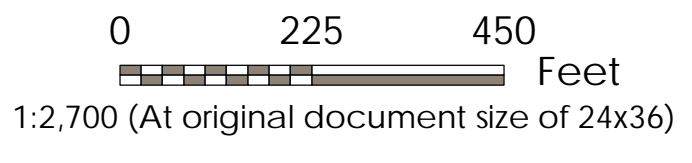
Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



Legend

- MONITORING/RECOVERY WELL
- 2012/2013 MTBE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- AREA OF INTEREST (AOI)
- AOI 4
- CROPPED GRID EXTENT
- 4.2 MAXIMUM CONCENTRATION OF MTBE [ug/L]
- ND NOT DETECTED

METHYL-TERTIARY BUTYL ETHER (MICROGRAMS PER LITER (ug/L))
 20 (STATEWIDE HEALTH STANDARD) - 200



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
 10-5

Title
 UNCONFINED AQUIFER MTBE MAXIMUM
 CONCENTRATION - 2012 TO 2013 DATA

213402602
 Prepared by GWC on 1/7/2017
 Technical Review by ADK on 3/9/2017
 Independent Review by JKD on 3/9/2017

Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
2. Sources: Stantec
3. Labels denote well identifier and MTBE concentration in micrograms per liter (ug/L).
4. CIG analytical data was interpolated using the Natural Neighbor gridding method in Surfer.
5. MTBE = methyl tertiary butyl ether
6. Aerial & Topo Image courtesy of USGS Earthstar Geographics. SIO © 2017 Microsoft Corporation. Copyright © 2013 National Geographic Society. I-cubed Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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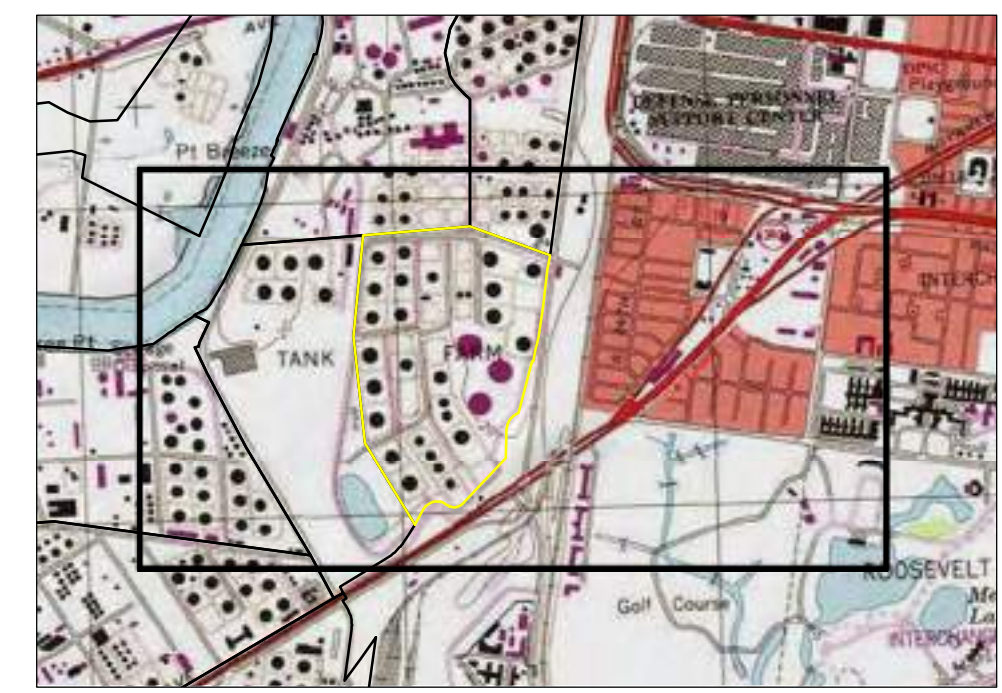
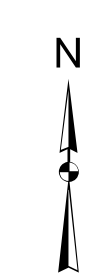
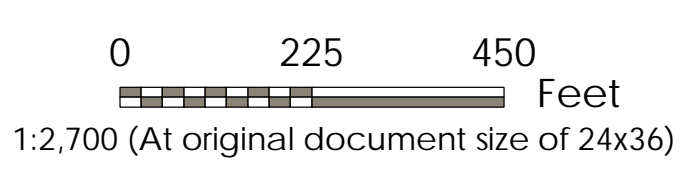
Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



Legend

- MONITORING/RECOVERY WELL
- 2014/2016 MTBE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- AREA OF INTEREST (AOI)
- AOI 4
- CROPPED GRID EXTENT
- 5.2 MAXIMUM CONCENTRATION OF MTBE [ug/L]
- ND NOT DETECTED

- METHYL-TERTIARY BUTYL ETHER (MICROGRAMS PER LITER (UG/L))
- 20 (STATEWIDE HEALTH STANDARD) - 200
 - 200 - 2,000
 - 2,000 - 20,000



- Notes**
1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
 2. Sources: Stantec
 3. Labels denote well identifier and MTBE concentration in micrograms per liter (ug/L).
 4. COC - analytical data was interpolated using the Natural Neighbor gridding method in Surfer.
 5. MTBE = methyl tertiary butyl ether
 6. Aerial & Topo Image courtesy of USGS Earthstar Geographics. SIO © 2017 Microsoft Corporation. Copyright: © 2013 National Geographic Society, I-cubed. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

213402602
 Prepared by GWC on 1/7/2017
 Technical Review by ADK on 3/9/2017
 Independent Review by JKD on 3/9/2017

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

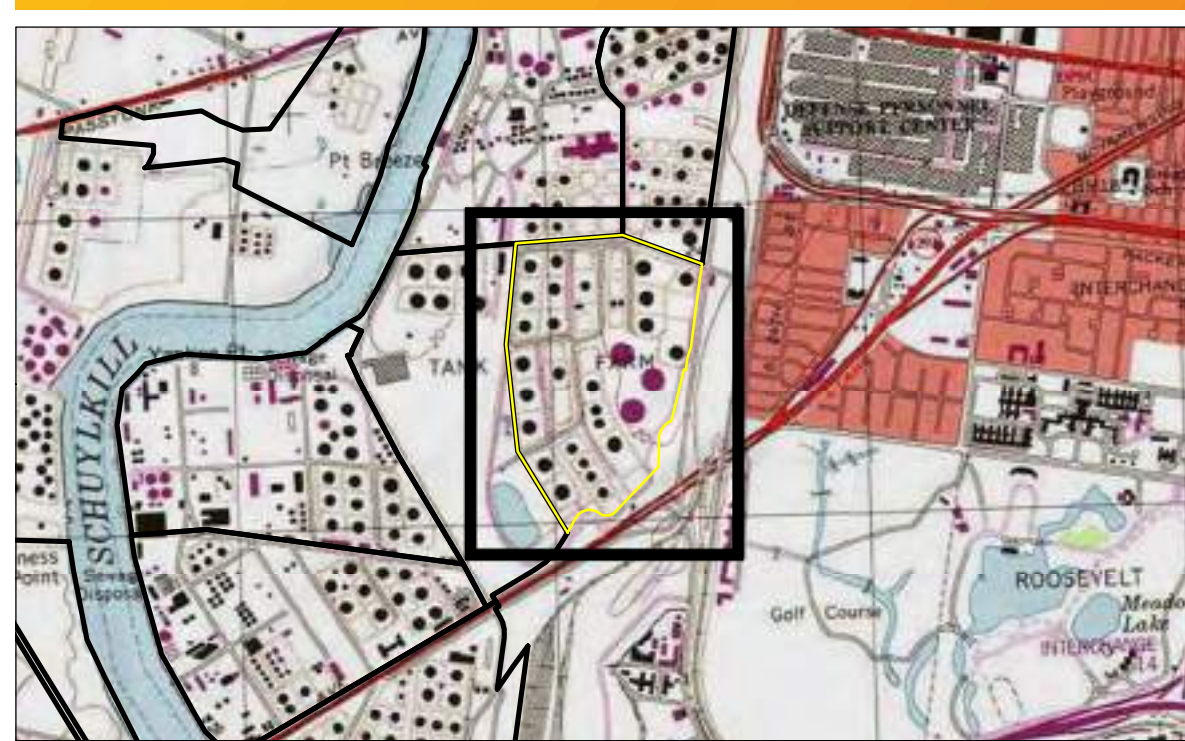
Figure No.
 10-6

Title
 UNCONFINED AQUIFER MTBE MAXIMUM
 CONCENTRATION - 2014 TO 2016 DATA

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Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



- Legend**
- LOWER AQUIFER MONITORING WELL
 - APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
 - AREA OF INTEREST (AOI)
 - AOI 4
 - 65 CONCENTRATION DETECTED IN GROUNDWATER SAMPLE EXCEEDS THE SHS (ug/L)
 - <1.0 COMPOUND NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT (ug/L)

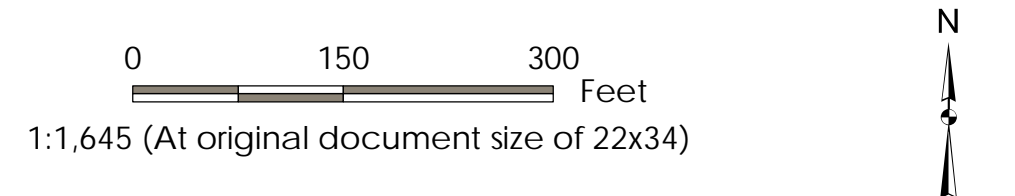
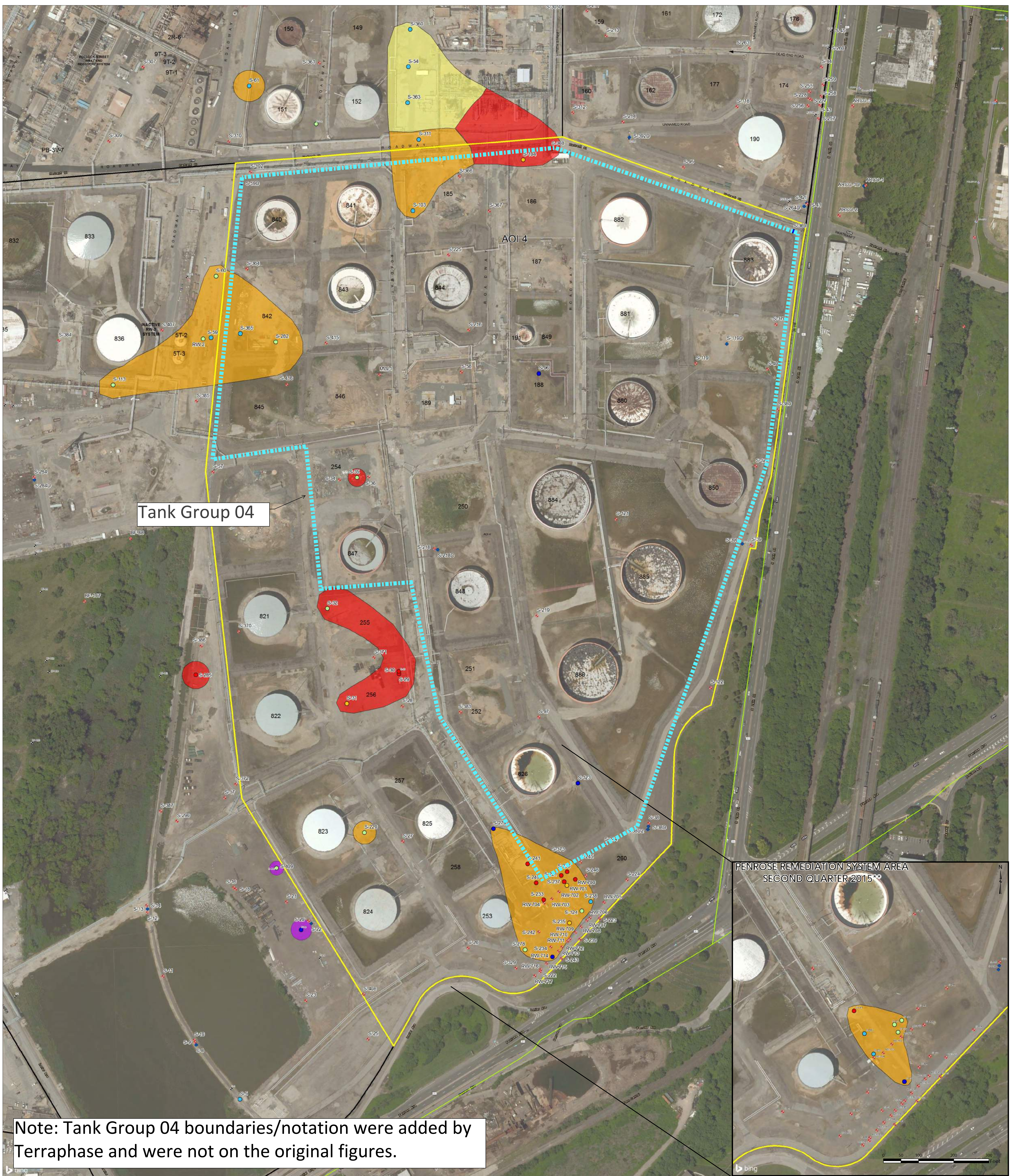


Figure No. **10-7**
 Title **LOWER AQUIFER GROUNDWATER EXCEEDANCES – BENZENE, MTBE, LEAD**
 Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145
 Project Location
 City of Philadelphia, Philadelphia County, Pennsylvania
 213402602
 Prepared by GWC on 2/14/2017
 Technical Review by ADK on 3/10/2017
 Independent Review by JKD on 3/10/2017

- Notes**
1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
 2. Sources: Stantec
 3. All concentrations shown in ug/L
 4. Dissolved concentrations of metals shown
 5. MTBE = methyl tertiary butyl ether
 6. J. indicates an estimated value
 7. Aerial & Topo © 2017 Microsoft Corporation
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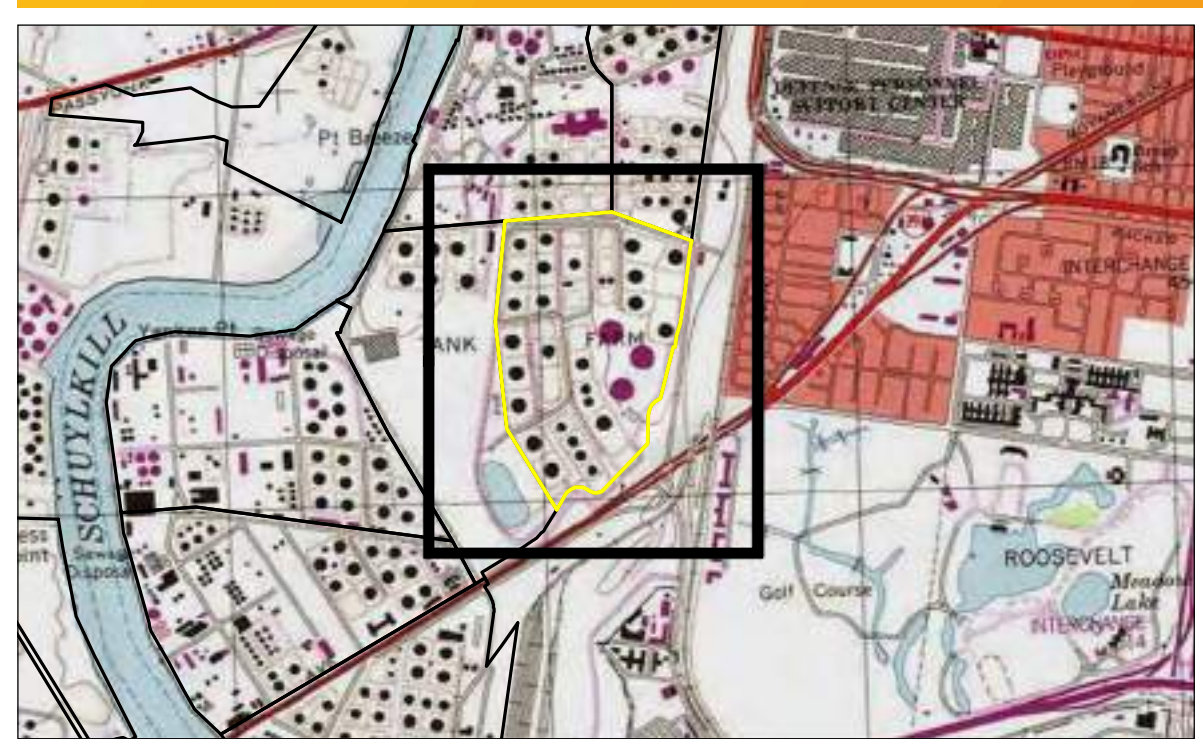




Tank Group 04

PENROSE REMEDIATION SYSTEM AREA
SECOND QUARTER 2015

Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



Notes
 1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
 2. Sources: Statistic
 3. Estimated LNAPL types established by Statistic using laboratory provided interpretations of product samples.
 4. Generalized LNAPL types established by Statistic using laboratory provided interpretations of product samples.
 5. Aerial & Topo © 2011 Microsoft Corporation
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 Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors
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- Legend**
- AOI 4 MONITORING WELL (INCLUDING SELECTED PERIMETER WELLS)
 - HYDROSTRATIGRAPHIC UNIT
 - UNCONFINED AQUIFER
 - LOWER AQUIFER
 - OTHER FACILITY MONITORING WELLS (OUTSIDE SCOPE OF THIS AOI 4 RIR)
 - OFFSITE MONITORING WELL - FORMER DSCP, PASSYUNK HOMES, STEEN, AND CSX PROPERTIES
 - APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
 - AREA OF INTEREST (AOI)
 - AOI 4

- MAXIMUM OBSERVED LNAPL THICKNESS (2013-PRESENT)
(FEET OF LNAPL)**
- 0.01 - 0.10
 - 0.11 - 0.50
 - 0.51 - 1.00
 - 1.01 - 1.50
 - 1.51 +
- ESTIMATED LNAPL PLUME EXTENT
GENERALIZED LNAPL TYPE**
- LIGHT DISTILLATE
 - MIDDLE DISTILLATE
 - MIXES OF LIGHT/MIDDLE DISTILLATE
 - HEAVY DISTILLATE

**NOTE: IN THE PENROSE REMEDIATION SYSTEM AREA, THE INSET MAP INDICATES THE OBSERVED LNAPL THICKNESS AND ESTIMATED PLUME EXTENT IN MAY 2015 (SECOND QUARTER GAUGING).

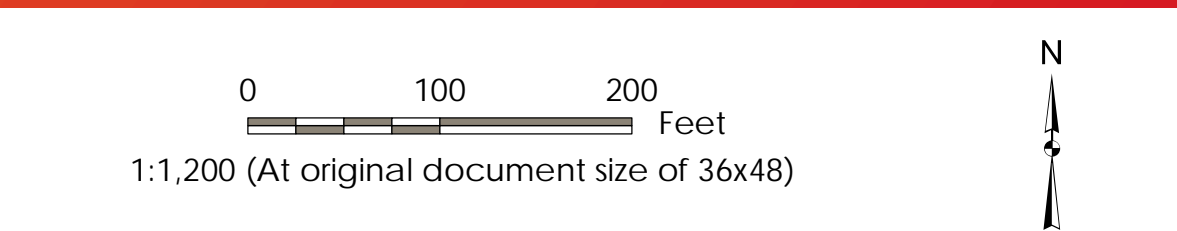


Figure No.
6-1
 Title
**ESTIMATED LNAPL PLUME
EXTENTS IN AOI 4 AND VICINITY**

Client/Project
 PHILADELPHIA REFINERY OPERATIONS
 A SERIES OF EVERGREEN RESOURCES GROUP, LLC
 3144 PASSYUNK AVENUE
 PHILADELPHIA, PA 19145

Project Location
 Philadelphia Refining Complex
 No. 4 Tank Farm
 Philadelphia, Pennsylvania

Prepared by ADK on 2/3/2017
 Technical Review by ANP on 2/28/2017
 Independent Review by AJM on 3/1/2017



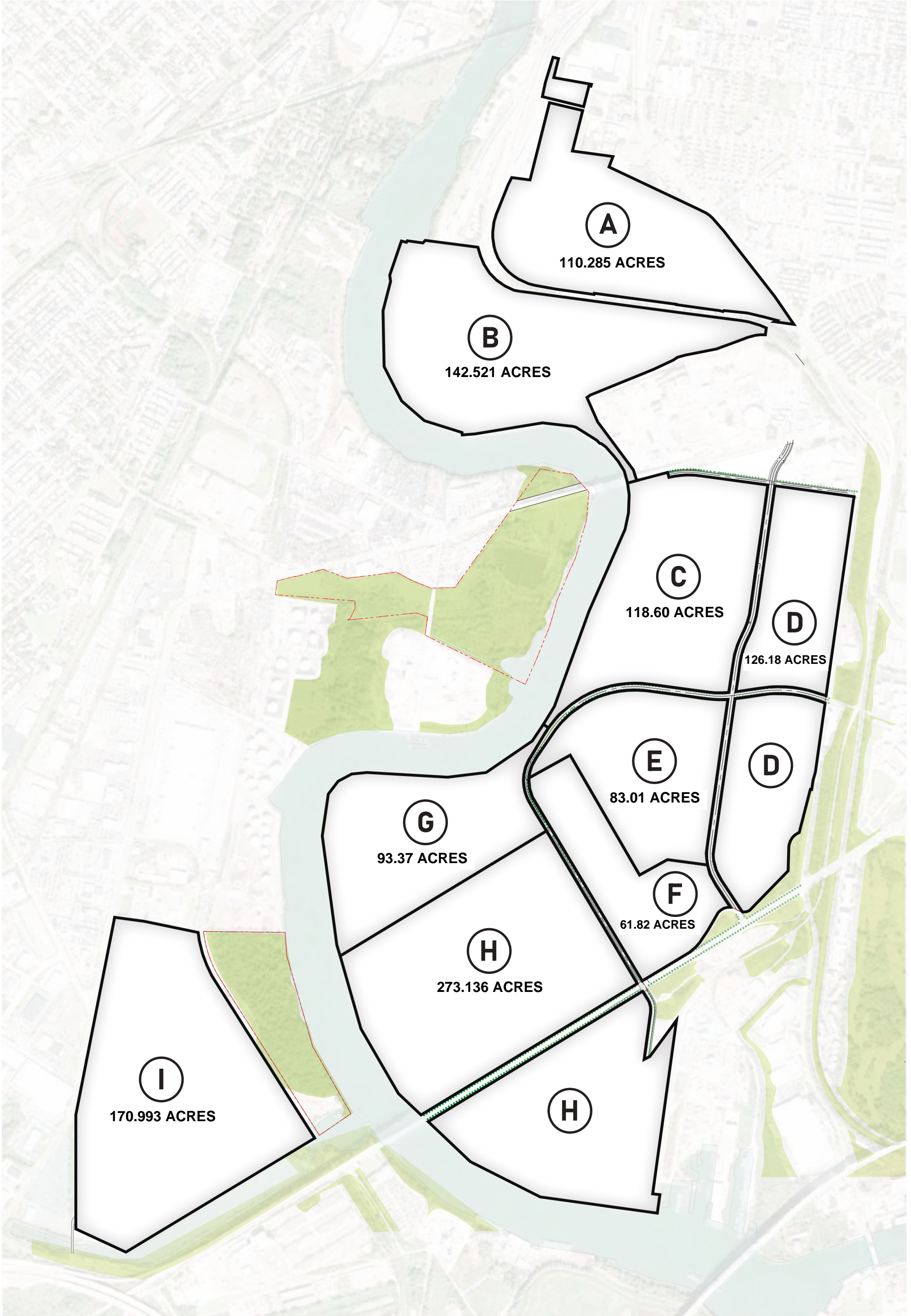
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Appendix B

Individual Parcel Map



INDIVIDUAL PARCEL MAP



Appendix C

Risk Assessment



FINAL

Site-Specific Human Health Risk Assessment

Tank Group 04
Former Philadelphia Energy Solutions Refinery
3144 West Passyunk Avenue
Philadelphia, Pennsylvania
(Incident No. 57976)

Prepared for

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Acronyms and Abbreviations

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
AT _c	averaging time for carcinogens
BaP	benzo(a)pyrene
bgs	below ground surface
C _{air}	constituent concentration in air
CFR	Code of Federal Regulations
cm ² /day	square centimeters per day
COPC	constituent of potential concern
C _{unit}	unit constituent concentration
ED	exposure duration
EF	exposure frequency
ET	exposure time
Facility	Former Philadelphia Energy Solutions refinery
ft	feet or foot
HI	hazard index
HQ	hazard quotient
kg	kilograms
LADD	lifetime average daily dose
mg/cm ²	milligrams per square centimeter
mg/day	milligrams per day
mg/kg	milligrams per kilogram
North Yard	Point Breeze Refinery North Yard
PADEP	Pennsylvania Department of Environmental Protection
PB Waste Storage Unit	Point Breeze Hazardous Waste Container Storage Unit
PESRM	Philadelphia Energy Solutions Refining and Marketing LLC
PM ₁₀	respirable soil particulates
Ransom	Ransom Consulting, LLC
RBSL	risk-based screening level
RfC	reference concentration
RfD	reference dose
RME	reasonable maximum exposure
the Site	Point Breeze Hazardous Waste Container Storage Unit
SF	slope factor
TCRL	target cancer risk



Terraphase	Terraphase Engineering Inc.
THQ	target hazard quotient
UCL	upper confidence limit
URF	unit risk factor
USEPA	United States Environmental Protection Agency



1 Introduction

Terraphase Engineering Inc. (Terraphase), on behalf of Philadelphia Energy Solutions Refining and Marketing LLC (PESRM), has prepared this *Site-Specific Human Health Risk Assessment* (the Risk Assessment) in support of the *Site Characterization Report* (Report) for Tank Group 04 (the Site), located within the Former Philadelphia Energy Solutions refinery facility (the Facility). This document describes the methodology and results of a site-specific human health risk assessment, performed in accordance with 25 Pa. Code § 250.409, to support a demonstration that conditions at the Site meet the tank closure requirements in accordance with the Storage Tank and Spill Prevention Act (Act 32).

The Facility, which is located at 3144 West Passyunk Avenue, Philadelphia, Pennsylvania (**Figure 1**), is undergoing tank closure activities in preparation for redevelopment. Tank Group 04 is located within an area of the Facility referred to as the Point Breeze Refinery South Yard (South Yard) (**Figure 2**). As discussed in Terraphase's (2021) *Aboveground Storage Tank Closure Work Plan* (Work Plan), which was approved by the Pennsylvania Department of Environmental Protection (PADEP) on April 23, 2021, closure of the above ground storage tanks (ASTs) under Act 32 is being pursued through a group closure process, in which ASTs in the same general area (e.g., tank farm) are demolished, removed, investigated, and evaluated at about the same time. There are eight tank groups in all and demolition of the tanks has been proceeding in phases at the Facility from the north to the south.

Following the demolition of the ASTs in Tank Group 04, between May 2021 and March 2022, soil and groundwater sampling was conducted in accordance with the Work Plan and the *Site Characterization Sampling and Analysis Plan – Tank Group 04* (SAP) submitted to PADEP on December 5, 2022. The sampling was performed to gather the data necessary to assess whether conditions at the Site following closure activities are protective of human health and the environment.

This Risk Assessment has been completed in accordance with the Pennsylvania Land Recycling and Environmental Remediation Standards Act ("Act 2") and risk assessment guidance from PADEP and the United States Environmental Protection Agency (USEPA). It is organized as follows:

- Section 2 presents the site setting. Information regarding the site description, operational history and usage of the tanks, topography, geology, and hydrology of the area is summarized. A discussion of on-site and off-site land and groundwater use under current and reasonably expected future land and groundwater use is also provided.
- Section 3 discusses the results of the soil and groundwater sampling performed in accordance with the Work Plan and SAP. This section documents how the sampling results adequately characterize the nature and extent of constituents in the environment to select a remediation standard and perform a site-specific risk assessment.
- Section 4 discusses the preparation of data used in the risk calculations.
- Section 5 presents the human health risk assessment calculations and the resulting risk characterization.
- Section 6 provides the site-specific standards proposed to support remedial action planning in the area.



- Section 7 summarizes the results of the human health risk assessment and the site-specific standards developed to support remedial action.
- Section 8 provides the references used in the preparation of this report.

Supporting information for the Risk Assessment is provided in **Appendix A**. **Appendix B** provides a discussion regarding how risk-based screening levels were derived to support investigation decisions during the Site Characterization and to demonstrate adequate characterization to support the Risk Assessment. **Appendix C** provides the analytical results from the soil and groundwater sampling performed. Finally, **Appendix D** provides select figures from the *Remedial Investigation Report, Area of Interest 4* (AOI 4 RIR; Stantec 2017) and the *Sitewide Fate and Transport Remedial Investigation Report* (Sitewide Fate and Transport RIR, Stantec 2022).

2 Site Setting

This section presents the site setting and includes a description of the Site, the local climate, topography, geology, and hydrology, and the on-site and off-site land and groundwater use.

2.1 Site Description

The Facility, a former 1,300-acre refinery, is currently undergoing decommissioning to support redevelopment. The Site¹ is 70.6 acres in size and is located within the Point Breeze South Yard, an area that is also referred to as AOI 4 by Evergreen as part of their One Cleanup Program effort. The Site is located south of Hartranft Street and north of Penrose Avenue, between South 26th Street and Schuylkill Avenue. The Tank Group 04 area formerly consisted of a large tank farm with large piping structures, a pump house, and plant access roadways. Except for the asphalt roadways that pass through portions of Tank Group 04, and the tank foundations themselves, the area is not covered by hardscape.

The ASTs addressed in this Report are listed in **Table 1 of the Report**. Sixteen other ASTs, not subject to this closure effort, were previously located within Tank Group 04.

Figure 3 provides a layout of Tank Group 04.

2.2 Operational History/Usage of the Tanks

The Facility operated as a petroleum refinery between 1860 and 2019. The refinery ceased operations in 2019. The demolition and decommissioning of the subject ASTs began in May 2021. Prior to demolition, the primary products held within these tanks were: crude (PB 826, PB 840, PB 841, PB 843, PB 847, PB 881, PB 882, PB 883, PB 884, PB 885, and PB 886), recovered Oil (PB 191), and light cycle oil (PB 848). Additional details regarding the size, contents, and construction of the tanks are provided in **Table 1** of the Report.

¹ Tank Group 04 consists of the tank farm referred to by the Facility as the No. 4 Tank Farm.



2.3 Topography

Topography at the Site is generally flat except for containment berms constructed around the tank areas to provide containment in the event of a release. Regional topography slopes gently to the west towards the Schuylkill River, the nearest water body to the Site. The ground surface elevation at the Site is approximately 15 feet (ft) above mean sea level².

2.4 Regional Geology and Hydrogeology

The Facility is located within the Atlantic Coastal Plain Physiographic Province of Pennsylvania. The Atlantic Coastal Plain is a physiographic province that is defined as having a flat topography, underlain by unconsolidated sediments that thicken to the southeast. The Coastal Plain deposits are sand, gravel, silt, and clay which drape over crystalline igneous and metamorphic rocks. In general, the resulting sediments are approximately 250 ft thick along the Delaware River. These sediments unconformably overlie much older, very complexly deformed rocks of the Piedmont physiographic province. The Coastal Plain deposits in the vicinity of the Facility consist of anthropogenic fill underlain by quaternary deposits.

Much of the Facility and surrounding area is underlain by historical fill material, which was placed for the purpose of reclaiming lowlands along the banks of the tidal Delaware and Schuylkill Rivers during industrialization. Below the fill material, sediments consist of gray, muddy deposits with occasional sand, gravel, and organic-rich lenses. These sediments were deposited in floodplain, channel, and marsh environments through the Holocene. The most recent deposits are poorly consolidated and below the phreatic surface of the unconfined aquifer as a result of their relatively young geologic age and position along the Schuylkill River (tributaries and creeks). Below the Holocene deposits is a Pleistocene glacial outwash deposit, commonly referred to as the “Trenton Gravel” along the Delaware River valley. Cretaceous-age sand and clay units making up the Potomac-Raritan-Magothy (PRM) aquifer system underly the Pleistocene deposits.

The sedimentary record near the Site consists of a complex series of water-bearing sand units which can comprise one or more hydrostatic units. Historical investigations conducted at the Facility have identified two saturated zones, including an unconfined shallow groundwater unit (occurring within the Holocene and Trenton Gravel deposits) and a deep groundwater unit known as the Farrington Sand, which is part of the PRM aquifer system. The deeper groundwater unit is separated by a clay unit; as such, the deeper groundwater has been classified as a semi-confined aquifer. Groundwater is first encountered generally at the Facility at a depth approximately 13 to 23 ft below ground surface (bgs).

Appendix D provides select figures from the *Remedial Investigation Report, Area of Interest 4* (AOI 4 RIR; Stantec 2017) and the *Sitewide Fate and Transport Remedial Investigation Report* (Sitewide Fate and Transport RIR, Stantec 2022) for reference including, Figures 2-6, 2-7, and 2-8 From the AOI 4 RIR which provide a detailed cross section of the subsurface in this area.

² North American Vertical Datum of 1988 (NAVD 88).



2.5 Local Geology and Hydrogeology

During the Site Assessment and Site Characterization, soil at the Site was primarily investigated within the upper 5 ft, although certain Site Characterization borings were advanced to a maximum depth of 15 ft. Monitoring wells were installed to depths of up to 20 ft bgs. Anthropogenic fill up to 11 ft thick was observed in soil cores collected from most of the soil borings installed in Tank Group 04. Soil beneath the fill layer generally consists of brown to brownish red gravelly sand, clay, and silt.

Historically, unconfined aquifer groundwater has been first encountered in Tank Group 04 at a depth of approximately 12 to 25 ft bgs (Stantec 2017). During site characterization activities, groundwater was encountered between approximately 13 and 24 ft bgs. Perched groundwater has also been noted to be present in the anthropogenic fill layers throughout the Facility, causing mounding and irregular depressions (Stantec 2017).

Groundwater at the refinery has historically been interpreted to flow to the south/southeast toward the convergence of the Delaware and Schuylkill Rivers. Based on Figure 5-4 of the AOI 4 RIR (Stantec 2017) and Figure 3-29 of the Sitewide Fate and Transport RIR (Stantec 2022) included in **Appendix D**, unconfined aquifer groundwater flow within Tank Group 04 has been interpreted to be locally divided, with groundwater in the southern portion of the Tank Group flowing south, and groundwater in the central portion flowing to depressions in the northern portions of the Tank Group.

2.6 On-site and Off-site Land Use

This section describes on-site and off-site land use under current and reasonably expected future conditions.

2.6.1 Current

Currently, the Site and its immediate surrounding area is undergoing decommissioning/demolition work, environmental investigation, and predevelopment activities. The land is zoned for Industrial Use.³ Aside from the asphalt roadways that pass through portions of Tank Group 04, and the tank foundations themselves, the area is currently uncovered and lightly vegetated. The Site is generally flat except for containment berms constructed around the tank areas to provide containment in the event of a release.

The area surrounding the Facility is currently characterized by a mixture of residential, commercial, and industrial properties⁴.

³ <https://openmaps.phila.gov/>.

⁴ <https://openmaps.phila.gov/>.



2.6.2 Future

As captured in the conceptual imagery developed by Hilco Redevelopment Partners⁵, the area encompassing Tank Group 04 is being redeveloped into a state-of-the-art, multimodal industrial park and life sciences campus with ancillary rail infrastructure, energy infrastructure, marine capabilities, and commercial uses. As a result, reasonably expected future land use in the area of the Site is commercial/industrial. Also, following redevelopment, much of the area is expected to be covered by hardscape (e.g., building pads, drive aisles, parking lots, roadways) or other features that will generally function as barriers to direct contact exposure.

In the future, land use in proximity to the Facility is expected to remain a mixture of residential, commercial, and industrial properties (City of Philadelphia 2022).

2.7 Groundwater Use

Stemming from several efforts to assess the potential for current and reasonably expected future use of groundwater at and in the vicinity of the Facility, Evergreen has documented no confirmed drinking water supply wells within 1-mile of the Facility. These efforts have included several well searches, field verification, and a review of the City of Philadelphia's ordinances. In 2021, Evergreen supplemented these efforts by reviewing the City of Philadelphia's publicly available information concerning potable drinking water intakes, contacting PADEP's Safe Drinking Water Program, contacting the City of Philadelphia's Health Department, contacting the City of Philadelphia Water Department, contacting the City of Philadelphia Department of Parks and Recreation, conducting updated database searches (paGWIS and eMapPA), coordinating with the PADEP to obtain information from the New Jersey Department of Environmental Protection, and providing additional documentation concerning the institutional controls at the Site which prohibit groundwater use (Evergreen 2021).

Overall, with consideration for the information compiled by Evergreen regarding groundwater use, this Risk Assessment assumes the following:

- Groundwater on-site, off-site, and on-facility is not a current or reasonably expected future source of potable or nonpotable water.
- Groundwater off-facility is not a current or reasonably expected source of potable water or nonpotable water.
- Groundwater off-facility is assumed to be a reasonably expected future source of nonpotable water.

3 Site Characterization

This section discusses the results of the soil and groundwater sampling performed in accordance with the Work Plan and SAP. A review of these results and how they adequately characterize the nature and

⁵ <https://www.thebellwetherdistrict.com/>.



extent of constituents in soil and groundwater at the Site, in support of the site-specific risk assessment, is also provided.

3.1 Soil Investigation

As discussed in the Work Plan, when no evidence of a release to the environment was identified during Tank Group 04 AST removal, ASTs were subject to Site Assessment sampling using a grid-based approach with additional biased samples toward the locations of pipe connections or other key infrastructure. Sampling was conducted during multiple mobilizations as the tanks were being demolished and the ground became available for sampling. The first mobilization was on July 29, 2021, and the last mobilization was completed on July 15, 2022, after the removal of double bottoms.

In total, 250 soil borings were installed and 263 soil samples were collected during the Site Assessment. **Figures 4A through 4D** show the location of each of the Site Assessment soil borings.

Based on the results of Site Assessment sampling in Tank Group 04, a Site Characterization plan was developed (Terraphase 2022). The objective of the Site Characterization was to delineate the horizontal and vertical extent of the potential releases until sufficient data were available to determine the need for interim or remedial measures. Site Characterization soil sampling was conducted between December 19, 2022, and January 4, 2023. The Site Characterization scope included the installation of an additional three soil borings and the collection of an additional four soil samples.

Each soil sample was analyzed for the constituents of potential concern (COPCs) listed in **Table 1** by Alpha Analytical, Inc. of Westborough, Massachusetts a PADEP-certified laboratories.

Further details are provided in Sections 5 and 6 of the Report.

3.2 Adequacy of Characterization

In accordance with 25 Pa Code § 245.309(b), the site characterization *“shall provide sufficient physical data, through field investigations, to determine the regulated substances involved, and the extent of migration of those regulated substances in surface water, groundwater, soil or sediment.”* Per the *Technical Guidance Manual* (PADEP 2021), in order to support a site-specific risk assessment *“the investigation needs to sufficiently characterize the nature and extent and composition of the regulated substances that have been released.”*

Per these requirements, the soil and groundwater sampling data collected were reviewed to determine whether additional soil sampling would be warranted to complete site characterization and a site-specific risk assessment. To help support this evaluation, site-specific risk-based screening levels (RBSLs) were derived in accordance with PADEP and USEPA risk assessment guidance. The RBSLs help to segregate soil and groundwater sampling data that indicate a higher potential for health significance from those that indicate a low potential. The RBSLs and their derivation are summarized in **Appendix B**. The soil and groundwater sampling results were compared to the RBSLs and the spatial distribution of concentrations greater than these levels is presented on **Figures 4 and 5**. The identification of locations with constituent concentrations greater than these RBSLs does not necessarily mean that an unacceptable risk has been identified. It simply helps a reviewer focus on a subset of the data in order to



make decisions regarding whether additional field investigation is necessary to support a risk assessment. The key consideration during this evaluation is whether constituents identified at concentrations above the RBSLs have sufficient lateral and vertical characterization to ensure that reliable and conservative estimates of the exposure concentration (usually a 95 percent upper confidence limit (UCL) on the mean) for a particular exposure area (and exposure scenario) can be developed. Based on these considerations, the soil and groundwater sample results at the Site were evaluated to determine the adequacy of the data to support the site-specific risk assessment.

3.2.1 Soil

As shown in **Table 2**, 20 of the 22 analyzed constituents were detected in soil at the Site. Benzene, cumene, ethyl benzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, xylenes (total), naphthalene, and lead were detected in soil at concentrations greater than the RBSLs. Lead was detected in soil at concentrations greater than the routine worker direct contact RBSLs. Benzene, cumene, ethyl benzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, xylenes (total), and naphthalene were detected in soil at concentrations greater than the routine worker vapor intrusion RBSLs. 1,2,4-trimethylbenzene, xylenes (total), naphthalene, and lead were detected in soil at concentrations greater than the construction worker direct contact RBSLs. No constituents were detected in soil at concentrations greater than the soil migration to groundwater RBSLs.

As further described in Section 7 of the Report, based on the review of the soil concentrations in comparison to the RBSLs and the spatial distribution of concentrations greater than these levels, the soil sampling performed adequately characterizes the nature and extent of regulated substances to support a site-specific risk assessment. The horizontal and vertical extent of constituents identified at concentrations above the RBSLs has been determined such that reliable and conservative estimates of the exposure concentration for the exposure area can be developed.

3.2.2 Groundwater

As shown in **Table 3**, 13 of the 22 analyzed constituents were detected in groundwater. Benzene was detected in groundwater at concentrations greater than the nonpotable groundwater use and off-site resident vapor intrusion RBSLs. No constituents were detected in groundwater at concentrations greater than the routine worker volatilization to outdoor air, routine worker vapor intrusion, construction worker direct contact, or groundwater migration to surface water RBSLs.

As further described in Section 7 of the Report, based on the review of the groundwater concentrations in comparison to the RBSLs and the spatial distribution of concentrations greater than these levels, the groundwater wells provide results that adequately characterize the nature and extent of regulated substances to support a site-specific risk assessment. The horizontal extent of constituents identified at concentrations above the RBSLs has been determined such that reliable and conservative estimates of the exposure concentration for the exposure area can be developed.



4 Data Selection and Preparation

All soil and groundwater data collected during the investigation are considered in this Risk Assessment. The following procedures are used to prepare the sampling data to support quantitative risk assessment. These procedures, which account for USEPA risk assessment guidance (USEPA 1989), are as follows:

- Constituent concentrations qualified by the lab as not detected (i.e., U-qualified) are evaluated as non-detects in accordance with USEPA guidance (1989)⁶.
- Constituent concentrations qualified by the lab as estimated (i.e., J-qualified) are included and treated as detected concentrations for quantitative assessment.
- The concentrations of xylenes are the sums of the concentrations of the isomers that were detected and half the quantitation limits of the isomers that were not detected in the same sample but were detected in the same matrix at the Site. If no isomer was detected in a sample, the constituent is considered to be not detected in the sample and handled accordingly, as described in Section 5.1.2.
- Constituent concentrations in duplicate field samples are averaged to obtain a representative concentration for the sample. When a constituent was detected in only one sample of a duplicate pair, the average of the detected concentration and one-half the quantitation limit for the non-detect is used.

While PADEP's (2021) *Technical Guidance Manual* and USEPA's (1989) risk assessment guidance include an optional step for shortening the list of constituents included in quantitative assessments, this risk assessment does not eliminate any detected constituents from the cumulative risk calculations. For this Risk Assessment, any constituent detected in soil or groundwater at the Site is considered a COPC, regardless of whether its concentration exceeded the RBSL or not.

5 Human Health Risk Assessment

Terraphase has performed this risk assessment to evaluate potential human health risks that could be attributable to former releases of hazardous constituents at the Site (i.e., Tank Group 04). Potential risks are characterized using a reasonable maximum exposure (RME), or a conservative estimate of the RME under the current and reasonably expected future land uses at and around the Site. The methods used in the human health risk assessment are based upon PADEP and USEPA human health risk assessment guidance.

⁶ As described in Section 4, any constituent detected in soil or groundwater is considered a COPC in the Risk Assessment. Also, as discussed in Section 5.1.2, in accordance with USEPA (1989) guidance, for each COPC the maximum detected concentrations in soil and groundwater are initially used as exposure concentrations for each exposure scenario. For some COPCs, the risk estimates were refined to reflect conservative estimates of the mean COPC concentration across the exposure area and reflected data from some locations where COPCs were non-detect. These estimates of the mean were calculated using USEPA's (2015) ProUCL software which includes methods for estimating upper confidence limits on the mean for left-censored datasets.



Section 5.1 describes how the exposure assessment is performed including the identification of scenarios for potential human exposure, the compilation of exposure factors for each receptor, and how exposure concentrations are calculated. Section 5.1.4.5 describes how toxicity values are compiled. Section 5.3 discusses how the risk characterization is performed and Section 5.4 summarizes the impact of currently anticipated uncertainties on the outcome of the risk characterization.

5.1 Exposure Assessment

In accordance with 25 Pa Code § 250.602(c)(2), this section discusses the exposure assessment performed to evaluate risks associated with potential human exposures to COPCs in soil and groundwater at the Site. It discusses the exposure assumptions used to quantify potential exposure via the incidental ingestion and inhalation exposure routes. Please note that while 25 Pa Code § 250.602(c)(2) indicates that an exposure assessment shall consider “ingestion, inhalation, and volatilization” pathways, this risk assessment also includes an evaluation of dermal contact in the exposure assessment.

The potential exposures via ingestion and dermal contact are quantified in terms of a dose as follows:

$$Dose = Concentration \times Intake$$

The dose for evaluating cancer risk is averaged over a lifetime and is called the lifetime average daily dose (LADD). For evaluating noncancer effects, the dose is averaged over the duration of potential exposure and is called the average daily dose. The concentration term in the dose equation refers to the average constituent concentration in an environmental medium to which a population is exposed over a specified duration. The intake term refers to the intake rate of the contaminated environmental medium, which is a function of the magnitude, frequency, and duration of exposure. The methods for estimating the concentration term are discussed in Sections 5.1.2 and 5.1.3. The exposure factors used to quantify the magnitude, frequency, and duration of potential exposures are discussed in Section 5.1.4.

Inhalation exposures are quantified in terms of an exposure concentration, which is an air concentration that is time-weighted over the duration of exposure. The exposure concentration for evaluating cancer risk is an average over a lifetime. For evaluating chronic and subchronic noncancer effects, the exposure concentration is an average over the duration of exposure. The methods for estimating air concentrations are discussed in Sections 5.1.2 and 5.1.3.

The environmental setting at and around the Site, including climate, geology, hydrogeology, water supply, land and groundwater use, is discussed in the Report and Section 2, and therefore is not repeated in this section.

5.1.1 Scenarios for Potential Human Exposure

Per the requirements specified in 25 Pa Code § 250.602 and § 250.603, this section identifies potentially exposed populations (receptors) and describes the exposure pathways for each receptor. The receptors and exposure pathways are also summarized in **Table 3**.



5.1.1.1 Potential On-Site Exposures

Current Conditions

The Site is currently undergoing decommissioning/demolition work, environmental investigation, and predevelopment activities. Access to the Facility is controlled with fencing and site security. Because of this, trespassing at the Site is expected to be extremely limited under current conditions. The current on-site receptors evaluated in the human health risk assessment include construction workers who may become exposed during site redevelopment or major construction activities and trespassers. Workers who occasionally perform site investigation work on-site are not evaluated because they are required to follow health and safety procedures, including the use of appropriate personal protective equipment, to prevent unacceptable exposures. Workers involved with the redevelopment and reuse of the Site are evaluated in the risk assessment, assuming they do not follow health and safety procedures or wear personal protective equipment.

Future Conditions

Reasonably anticipated future receptors at and in the immediate vicinity of the Site could include workers who may be exposed during the performance of typical or routine commercial activities (routine workers), maintenance workers who may become exposed during maintenance activities including minor subsurface repair/utility activities, construction workers who may become exposed during site redevelopment or major construction activities, and trespassers.

Potential exposure of routine workers is assumed to include incidental ingestion and dermal contact with COPCs in exposed surface soil. Routine workers could also be exposed to the following:

- COPCs in vapors and particulates from exposed surface soil
- COPCs in vapors from subsurface soil shallow groundwater that migrates into outdoor air
- COPCs in vapors from subsurface soil and groundwater that migrates through building foundations into indoor air

Potential future exposure of construction workers and maintenance workers is assumed to include the following:

- Incidental ingestion and dermal contact with COPCs in exposed surface and subsurface soil and shallow groundwater
- Inhalation of COPCs in airborne particulates and vapors from exposed surface and subsurface soil and shallow groundwater

Potential future exposures of trespassers⁷ are assumed to include the following:

- Incidental ingestion of and dermal contact with COPCs in exposed surface soil
- COPCs in vapors and particulates from exposed surface soil

⁷ While receptor populations could include trespassers, this risk assessment did not quantitatively evaluate the potential exposure of these receptors, but instead relies upon the quantitative risk calculations performed for routine workers to serve as a surrogate for this population.



- COPCs in vapors from subsurface soil and shallow groundwater that migrates into outdoor air

5.1.1.2 Potential Off-Site Exposures

Potential off-Site receptors under current and future conditions may include residents. Potential exposure of off-Site residents is assumed to include inhalation of COPCs in airborne particulates from on-Site soil and/or vapors from on-Site soil and groundwater. Off-Site residents could also be exposed to vapors from groundwater that migrates through building foundations into indoor air.

The risk assessment also considers and evaluates the potential for groundwater contamination to migrate to the Schuylkill River given its proximity to the Site.

5.1.2 Exposure Concentrations

This section describes how exposure concentrations are determined for the soil and groundwater risk estimates.

5.1.2.1 Soil Exposure Concentrations

To evaluate potential exposure to soil and to streamline this risk assessment, initially the maximum detected concentration of each COPC in soil from any location across the Site and at any depth is conservatively used as the exposure concentration for each exposure scenario. This initial set of soil concentrations represents upper-bound estimates of the actual exposure concentrations, and as such, the cumulative cancer risk and noncancer hazard index (HI) estimates calculated using these concentrations represent upper-bound estimates.

If an upper-bound RME cumulative cancer or noncancer HI estimate for an exposure unit exceeds the PADEP risk management goals (i.e., incremental cumulative cancer risk greater than 1×10^{-4} and/or noncancer HI greater than 1)⁸, then a less high-biased estimate of the RME risk/HI is calculated only for those constituents contributing most to the upper-bound cumulative risk/HI estimates using more representative (refined) exposure concentrations. For the remaining COPCs, maximum detected concentrations are retained as the exposure concentrations.

For evaluating direct contact with soil,⁹ refined exposure concentrations are estimated by calculating a 95 percent UCL on the mean using the soil data from sampling locations within the exposure area, which conservatively includes the entire Tank Group 04 area. The UCLs are calculated using the maximum

⁸ Per PADEP's request, cumulative cancer risks and noncancer HIs greater than 1.0×10^{-4} and 1.0 respectively, have also been identified as potentially warranting risk management. While this approach has been used in support of this project, it is Terraphase's position that USEPA's risk assessment and risk management guidance, as well as PA's regulations and guidance indicate that rounding risk estimates to one significant figure is appropriate. Presenting risk characterization results with one significant figure is standard practice, and we are not aware of any scientific basis that would justify presenting the risk characterization results with more than one significant figure. As USEPA (2004) noted, doing so would imply a level of precision that cannot be justified.

⁹ Direct contact exposure to soil includes incidental ingestion, dermal contact, and inhalation of particulates from exposed surface soil and vapors from surface and subsurface soil into outdoor air.



detected concentrations from any depth at each sample location. The UCL calculations are performed using ProUCL (Version 5.1.00 [USEPA 2015]), including the Kaplan-Meier method for datasets with non-detects¹⁰. For expediency, the recommended values from ProUCL are used. The UCLs are then used to estimate the cumulative cancer risk and HI for the exposure area. Where such refinements are made, the specific refinement for each case and rationale is discussed in Section 5.3.2. This approach (i.e., refining the exposure concentrations for only the COPCs contributing most to the cumulative risk/HI) is efficient since it avoids calculations (such as UCL calculations) that would not materially affect the cumulative cancer risk and/or HI estimates and is consistent with USEPA guidance (1989). This approach is also conservative, because it uses the maximum detected concentration, rather than 95 percent UCLs, for many COPCs.

As a supplement to these exposure area risk/HI estimates, for exposure scenarios where potentially unacceptable risks/HIs are identified and for vapor intrusion exposure, soil risk/HI estimates are calculated for each soil sampling location. This is done to facilitate the identification of areas with potentially unacceptable risks/HI and to guide risk management decision making (e.g., what areas of the Site would warrant and not warrant vapor intrusion risk management). For these location-specific calculations, the highest detected concentration of each COPC from any depth at each soil sample location is used. Additionally, where a COPC is non-detect at a location but detected within the specific exposure media at the Site, ½ the analytical limit is used. This set of soil concentrations represent upper-bound estimates of the actual exposure concentrations, and as such, the cumulative cancer risk and noncancer HI estimates calculated using these concentrations should also be considered upper-bound estimates.

5.1.2.2 Groundwater Exposure Concentrations

To evaluate potential exposure to groundwater and streamline this risk assessment, initially the maximum detected concentration of each COPC in groundwater from any location across the Site is conservatively used as the exposure concentration for each exposure scenario.

As a supplement to these exposure area risk estimates, for exposure scenarios where potentially unacceptable risk/HI estimates are identified, groundwater risk/HI estimates are calculated for each well. This is done to facilitate the identification of areas of the Site with potentially unacceptable risks and to guide risk management decision making. For these location-specific calculations, the highest

¹⁰ For such left-censored data sets with non-detect results consisting of multiple detection limits (DLs) or reporting limits (RLs), ProUCL includes several methods for estimating upper confidence limits on the mean including methods which use Kaplan Meier (KM) (1985) estimates. Based upon Kaplan Meier estimates, and the distribution and skewness of detected observations, several upper limit computation methods which adjust for data skewness are incorporated in ProUCL 5.1. The KM estimation method is based upon a distribution function estimate, like the sample distribution function, except that the KM method adjusts for censoring. The KM method is commonly used in survival analysis (e.g., dealing with right-censored data associated with terminally ill patients) and various other biomedical applications. Section 4 of USEPA's (2015) *ProUCL Version 5.1.002 Technical Guide* includes a detailed discussion regarding how ProUCL calculates upper confidence limits on the mean for data sets containing non-detect observations, including using the KM estimation method (Section 4.4).



detected concentration for each COPC is used. Where a COPC is non-detect at a location but detected within the media at the Site, ½ the analytical limit is used.

5.1.3 Fate and Transport Models

The following models are used in the risk assessment to estimate exposure concentrations for the exposure scenarios discussed in Section 5.1.1. These models are used by USEPA and state regulatory agencies (including PADEP) for conservative, screening level analysis. The following are brief descriptions of the models. Further details of these models are provided in **Appendix A**.

5.1.3.1 Vapor Emission from Exposed Soil

Vapor emissions from exposed soil are estimated using the Jury model (Jury et al. 1938) based on depletion over time, assuming conservatively that the soil is initially impacted from the ground surface to the water table (a depth of approximately 19 ft bgs, the average depth to groundwater in Tank Group 04).

A discussion of the model is provided in **Appendix A**.

5.1.3.2 Vapor Emission from Groundwater

Vapor emissions from groundwater (not exposed) are calculated using the steady-state diffusion equation in one-dimension assuming a constant source concentration and a maximum concentration gradient.

A discussion of the model is provided in **Appendix A**.

5.1.3.3 Vapor Emission from Exposed Groundwater

The model for estimating vapor emissions from exposed groundwater during excavation activities is estimated using mass transfer coefficients recommended by USEPA (1995).

A discussion of the model is provided in **Appendix A**.

5.1.3.4 Air Dispersion

Annual average air concentrations are estimated using the empirical correlations presented in USEPA's (2002) *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*, assuming a square source area, and correlation coefficients for the Philadelphia, Pennsylvania meteorological area, which is the area nearest to the Site among the locations with available correlation coefficients.

For soil and groundwater exposures, the source area is assumed to be 70.6 acres, the area of Tank Group 04. For exposure scenarios where groundwater is encountered during excavations to the water table, the air concentrations are estimated in an analogous manner, but the source area is based on a 15 by 15-foot excavation area and an averaging period of 24 hours. The maximum 24-hour average air concentration was estimated from the annual average air concentration by using a conservative factor of 0.4/0.19 (or 2.1 [USEPA 2002]).



5.1.3.5 Dust Emission

For the routine worker and off-site resident exposure scenarios that involve exposure to COPCs in outdoor soil, the emission of respirable soil particulates (PM₁₀) is calculated using the wind erosion model recommended by USEPA (1996b) with USEPA default soil parameters, and wind speed and anemometer height from the nearest weather station, which is located in Philadelphia, Pennsylvania (NOAA 2018).

During maintenance activities, the PM₁₀ level is set at 50 micrograms per cubic meter (µg/m³). This PM₁₀ level is based on a time-weighted average assuming maintenance workers spend 1/3 of their exposure period excavating into the subsurface and 2/3 of their exposure period conducting maintenance activities that do not involve excavation into the subsurface. In calculating the time-weighted average, the 24-hour average National Ambient Air Quality Standards for PM₁₀ of 150 µg/m³ is used as the PM₁₀ concentration during excavations and a PM₁₀ concentration of 1 µg/m³ is used for the time during maintenance activities that do not involve excavation. The PM₁₀ concentration during non-excavation maintenance activities is expected to be less than 1 µg/m³, based on the wind erosion model recommended by USEPA (1996b) using site-specific wind speed from Philadelphia, Pennsylvania (NOAA 2018).

During construction activities, the PM₁₀ level is set at 50 µg/m³, which is the former annual average National Ambient Air Quality Standard for PM₁₀ since construction workers are assumed to be performing excavations for a work year. It is assumed that the PM₁₀ concentration would be at this limit every day for the entire period of construction worker exposure.

5.1.3.6 Vapor Intrusion into Future Buildings

Indoor air concentrations from the migration of vapors from soil and groundwater into a hypothetical future nonresidential building is estimated using the model described by Johnson and Ettinger (1991), which PADEP and USEPA recommend for screening level evaluations (PADEP 2021; USEPA 2004a, 2017b). Indoor air concentrations from groundwater into a hypothetical future residential building are also estimated using this model.

Indoor air concentrations from the migration of vapors from on-site soil is calculated by assuming that soil contamination extends from the bottom of the future building slab to the water table (i.e., a depth of 3 ft) for all constituents. These calculations also assume that the building cracks are filled with sand and utilize generic properties for sand recommended by USEPA (2004a). Generic residential building parameters (PADEP 2021; USEPA 2004a, 2017b) are also used.

A discussion of the model and the input parameters used in the assessment is provided in **Appendix A**.

5.1.3.7 Nonpotable Groundwater Use

Potential exposures to COPCs in groundwater via nonpotable groundwater use are evaluated using a hypothetical scenario where groundwater is used to fill a backyard wading pool (“kiddie” pool). This scenario represents a reasonable worst case exposure scenario in which the estimated exposure is expected to be higher than those associated with other nonpotable uses (e.g., watering lawns, washing



cars). The model for estimating vapor emission from a residential kiddie pool is based on models for estimating vapor emissions from open-top batch tanks (USEPA 1995a, 1995b).

A discussion of the model and the input parameters used in the assessment is provided in **Appendix A**.

5.1.3.8 Soil-to-Groundwater Pathway

Impacts to groundwater from site-related constituents are evaluated by calculating cancer risk and noncancer HI estimates by scaling off of the risk-based soil migration-to-groundwater RBSLs. These RBSLs were calculated using both an “equilibrium partitioning” (also called soil/water partitioning [USEPA 1996a]) and a “leach test” methodology, as described in **Appendix B**. For each COPC, the soil screening level corresponding to the more realistic of the two calculation methods is used as a soil migration-to-groundwater screening level. Soil migration-to-groundwater RBSLs were calculated using the target groundwater concentrations based on groundwater RBSLs for the following scenarios:

- Routine worker exposure to COPCs in groundwater via volatilization to outdoor air and vapor intrusion
- Construction worker exposure to COPCs in groundwater via direct contact
- Off-site resident exposure to COPCs in groundwater via vapor intrusion
- Receptor exposure to COPCs in groundwater via nonpotable groundwater use

Because the groundwater migration to surface water screening levels are not entirely human health based, estimates of cancer risk and HI are not calculated to evaluate this exposure scenario. Instead, soil concentrations that could result in exceedances of the groundwater migration to surface water RBSLs are identified.

The target groundwater concentrations are presented in **Appendix B, Attachment 4**.

5.1.4 Exposure Factors

In this risk assessment, standard default exposure factors¹¹ recommended by PADEP and USEPA for estimating RME are used where available and appropriate. Where standard default exposure factors are not available or appropriate for an exposure scenario, the evaluation was conducted using exposure factors that are based on site-specific considerations and professional judgment. The standard default exposure factors are conservative assumptions about the magnitude, frequency, and duration of exposures, which, in combination, are intended to provide estimates of exposures that are higher than actual exposures to a large portion (90 to 99 percent) of a potentially exposed population.

5.1.4.1 Routine Workers

In this risk assessment, potential exposure of routine workers to constituents in soil and groundwater is conservatively evaluated using the standard default exposure factors used by PADEP in deriving the Statewide Health Standards (SHS). Where PADEP has not recommended a standard default exposure

¹¹ Because PADEP does not maintain default exposure factors for dermal contact with soil, this exposure assessment used standard default dermal contact exposure factors recommended by USEPA for evaluating RME (USEPA 2014).



factor, standard default exposure factors recommended by USEPA (1991, 2014) are used where available and appropriate.

Soil Ingestion Rate

The soil ingestion rate of 50 milligrams per day (mg/day) is PADEP's default value for evaluating RME in nonresidential settings (25 Pa Code § 250.306(d)).

Soil Dermal Contact Rate and Absorption

The dermal contact rate is the product of the exposed skin surface area and the soil-to-skin adherence factor. The exposed skin surface area of 3,527 square centimeters per day (cm²/day) and the soil-to-skin adherence factor of 0.12 milligrams per square centimeter (mg/cm²) are USEPA's recommended values for evaluating RME with soil by workers in commercial/industrial settings (USEPA 2014). The absorbed dose from dermal contact with soil is estimated by multiplying the dermal contact rate by USEPA-recommended absorption factors for absorption from soil (USEPA 2004b).

Exposure Time

Routine workers are assumed to be at the Site with the potential to inhale vapors and particulates from site-related sources for 8 hours/day. This exposure time is PADEP's (25 Pa Code § 250.307(d)) and USEPA's recommended value for full-time workers (USEPA 2009).

Exposure Frequency

An exposure frequency of 180 days/year is used to evaluate outdoor nonresidential exposure to soil. It is also used to evaluate nonresidential exposure to vapors in outdoor air from shallow groundwater. This is PADEP's standard default value for evaluating nonresidential exposures, which assumes frozen ground for several days of the year consistent with 25 Pa Code § 250.307(d).

An exposure frequency of 250 days/year is used to evaluate indoor nonresidential exposure to constituents from soil and shallow groundwater via vapor intrusion. This assumption is USEPA's standard default value for evaluating RME in commercial/industrial settings (USEPA 1991, 2014). It is based on a 5-day work week and 50 weeks/year.

Exposure Duration

The exposure duration of 25 years is the PADEP (25 Pa Code § 250.307(d)) and USEPA (1991, 2014) standard value for estimating RME in commercial/industrial settings. It is the 95th percentile job tenure of workers in manufacturing.

This combination of exposure frequency and exposure duration is expected to be conservative for the amount of time that workers are actually exposed to soil during outdoor activities, as routine workers spend the majority of their time indoors. USEPA (1991, 2014) has recommended the use of these values for evaluating high-end routine worker exposures.



Body Weight

The body weight of 80 kilograms (kg) is PADEP's (25 Pa Code § 250.307(d)) and USEPA's standard value for assessing exposure of adults (USEPA 2014).

Averaging Time

The averaging time for evaluating cancer risk is equal to a lifetime of 70 years, and the averaging time for evaluating noncancer risk is equal to the exposure duration (USEPA 1989).

5.1.4.2 Maintenance Workers

The exposure factors used for evaluating potential exposure of maintenance workers to soil and groundwater are as follows:

Soil Ingestion Rate

The ingestion rate of 100 mg/day is USEPA's recommended soil ingestion rate for outdoor workers engaged in high-intensity soil contact activities such as repairing underground utilities, repairing roadways or performing landscaping activities (USEPA 2002). This soil ingestion rate is proposed by USEPA to reflect increased ingestion exposures experienced by workers during landscaping or other soil disturbing activities.

Soil Dermal Contact Rate and Absorption

The dermal contact rate is the product of the exposed skin surface area and soil-to-skin adherence factor. The exposed skin surface area of 3,527 cm²/day and the soil-to-skin adherence factor of 0.12 mg/cm² are USEPA's recommended values for evaluating RME in commercial/industrial settings (USEPA 2014). The exposed skin surface area is based on the weighted average of mean values for head, hands, and forearms.

Soil Exposure Frequency

The exposure frequency of 30 days/year is based on professional judgment regarding the number of days per year of maintenance activities involving soil contact. It is the number of workdays in 6 weeks of such activities, which is an estimate of the time needed to complete occasional subsurface maintenance activities. This exposure frequency is also consistent with a high-end exposure frequency expected for individuals charged with performing landscaping activities at the Site throughout a year (e.g., one day a week, every two weeks or about 26 days/year).

Inhalation Exposure Time

Maintenance workers are assumed to be at the Site with the potential to inhale vapors and particulates from site-related sources for 8 hours/day, the PADEP (25 Pa Code § 250.307(d)) and USEPA recommended value for full-time workers (USEPA 2009).



Groundwater Ingestion

The incidental groundwater ingestion rate is the product of the hourly ingestion rate and exposure time. The ingestion rate of 0.005 liters per hour is one-tenth of USEPA's recommended value for incidental ingestion while swimming (USEPA 1989) and represents a very conservative estimate of incidental groundwater ingestion that could occur while workers are in an excavation pit. The exposure time of 2 hours per day for contact with groundwater or surface water during maintenance activities is based on professional judgment.

Groundwater Dermal Contact

The exposed skin surface area of 3,527 cm² is based on the USEPA-recommended exposed skin surface area for evaluating high-end contact with soil by workers in industrial settings (USEPA 2014). Workers are conservatively assumed to be covered with groundwater over this exposed skin surface area for 2 hours per event. The chemical-specific permeability coefficient (K_p) for dermal absorption from groundwater is estimated following USEPA guidance (USEPA 1992, USEPA 2004b).

Groundwater Exposure Frequency

The exposure frequency of 15 days per year assumes that the maintenance work involves excavations that encounter groundwater for 5 days per week for 3 weeks per year, based on professional judgment. These exposure frequencies are expected to be conservative for the amount of time that workers are actually exposed to soil or groundwater (as opposed to the total time for maintenance or construction, which typically includes time not associated with excavation).

Groundwater Vapor Inhalation Exposure Time

Maintenance workers are assumed to be exposed to vapors from groundwater 2 hours per day while performing maintenance activities in groundwater, based on professional judgment.

Exposure Duration

An exposure duration of 10 years is used for maintenance worker exposure to soil or groundwater. The exposure duration of 10 years is supported by the analysis of Burmaster (2000), using data from the Bureau of Labor Statistics through February 1996, which indicated that 95th and 90th percentile job tenure of workers in construction is approximately 12.48 years and 7.7 years, respectively. The duration of 10 years is longer than the length of time that workers typically work in an occupation (USEPA 2014).

Body Weight

The body weight of 80 kg is PADEP's (25 Pa Code § 250.307(d)) and USEPA's standard value for assessing exposure of adults (USEPA 2014).

Averaging Time

The averaging time for evaluating cancer risk is equal to a lifetime of 70 years, and the averaging time for evaluating noncancer HI is equal to the exposure duration (USEPA 1989).



5.1.4.3 Construction Workers

The exposure factors used for evaluating potential exposure of construction workers to soil and groundwater are as follows:

Soil Ingestion Rate

The ingestion rate of 200 mg/day is the 90th percentile from the adult soil ingestion study published by Stanek et al. (1997). It is more appropriate than the 95th percentile (330 mg/day) from the same study, because in a study of only 10 adults, the 95th percentile is at or beyond the highest observed ingestion rate and, as such, has far more uncertainty than the 90th percentile. Using the 90th percentile is also consistent with USEPA and PADEP guidance on selecting exposure factors for estimating the RME.

Soil Dermal Contact Rate and Absorption

The dermal contact rate is the product of the exposed skin surface area and soil-to-skin adherence factor. The exposed skin surface area of 3,527 cm²/day and the soil-to-skin adherence factor of 0.12 mg/cm² are USEPA's recommended values for evaluating RME in commercial/industrial settings (USEPA 2014). The exposed skin surface area is based on the weighted average of mean values for head, hands, and forearms.

Soil Exposure Frequency

The exposure frequency of 250 days/year is based on professional judgment regarding the number of days of soil excavation or other high-intensity soil contact activities. This exposure frequency is expected to overestimate the amount of time that workers are actually exposed to soil in excavations or during other high-intensity soil contact activities (as opposed to the total time for construction, which typically includes time not associated with high-intensity soil contact activities). It is based on a 5-day work week and 50 weeks per year.

Inhalation Exposure Time

Construction workers are assumed to be at the Site with the potential to inhale vapors and particulates from site-related sources for 8 hours/day, the PADEP (25 Pa Code § 250.307(d)) and USEPA recommended value for full-time workers (USEPA 2009).

Groundwater Ingestion

The incidental groundwater ingestion rate is the product of the hourly ingestion rate and exposure time. The ingestion rate of 0.005 liters per hour is one-tenth of USEPA's recommended value for incidental ingestion while swimming (USEPA 1989) and represents a very conservative estimate of incidental groundwater ingestion that could occur while workers are in an excavation pit. The exposure time of 2 hours per day for contact with groundwater during construction activities is based on professional judgment.

Groundwater Dermal Contact

The exposed skin surface area of 3,527 cm² is based on the USEPA-recommended exposed skin surface area for evaluating high-end contact with soil by workers in industrial settings (USEPA 2014). Workers



are conservatively assumed to be covered with groundwater over this exposed skin surface area for 2 hours per event. K_p for dermal absorption from groundwater is estimated following USEPA guidance (USEPA 1992, USEPA 2004b).

Groundwater Exposure Frequency

The exposure frequency of 15 days per year assumes that the construction work involves excavations that encounter groundwater for 5 days per week for 3 weeks per year, based on professional judgment.

Groundwater Vapor Inhalation Exposure Time

Construction workers are assumed to be exposed to vapors from groundwater 2 hours per day while performing maintenance activities in groundwater, based on professional judgment.

Exposure Duration

The exposure duration of 1 year is based on professional judgment regarding the duration of site redevelopment activities at the Site that will involve earthmoving.

Body Weight

The body weight of 80 kg is PADEP's (25 Pa Code § 250.307(d)) and USEPA's standard value for assessing exposure of adults (USEPA 2014).

5.1.4.4 Nonpotable Use

The exposure factors used for evaluating potential exposure to groundwater through a hypothetical scenario where groundwater is used to fill a backyard wading pool ("kiddie" pool) are as follows:

Exposure Frequency and Duration

The exposure frequency for the kiddie pool scenario is 96 days/year, which is based on 4 days per week for the number of months, 6 months, when the average daily temperature is above 65 degrees Fahrenheit in Philadelphia, Pennsylvania (NOAA 2018). Residents are assumed to be exposed to groundwater for 26 years (6 years as children and 20 years as adults; USEPA 2014). This combination of exposure frequency and exposure duration is expected to be conservative for the amount of time that residents would actually spend using groundwater off-facility.

Incidental Water Ingestion

The rate of 0.05 L/hour is the USEPA-recommended value for ingestion of water while swimming (USEPA 1989).

Dermal Contact Rate

The exposed skin surface areas of 6,365 cm² and 19,652 cm² are USEPA's recommended values for evaluating RME with groundwater by children and adults, respectively (USEPA 2014). Child and adult residents are assumed to wade in the pool for 2 hours per event, and one event per day, based on professional judgment. The absorbed dose for organic constituents is estimated using the nonsteady-state approach (USEPA 2004b), which is more conservative than the steady-state approach (USEPA



1989), particularly for hydrophobic constituents. The permeability coefficient (K_p) for dermal absorption of organic constituents from groundwater is estimated following USEPA guidance (USEPA 2004b).

5.1.4.5 Off-Site Residents

The exposure factors used for evaluating potential exposure of off-site residents to on-site soil and groundwater if airborne particulates and vapor from on-site soil or airborne vapor from on-site groundwater were to migrate off-site, are as follows:

Exposure Time

Residents are assumed to be at home with the potential to inhale vapors and particulates from site-related sources for 24 hours/day. This exposure time is PADEP's (25 Pa Code § 250.307(d)) and USEPA's recommended value for residents (USEPA 2009).

Exposure Frequency

An exposure frequency of 250 days/year is used to evaluate outdoor residential exposure to vapors in outdoor air from site-related soil and shallow groundwater. This is PADEP's standard default value for evaluating residential exposures, which assumes frozen ground for 100 days of the year consistent with 25 Pa Code § 250.307(d).

An exposure frequency of 350 days/year is used to evaluate indoor residential exposure to constituents from site-related shallow groundwater via vapor intrusion. This assumption is USEPA's standard default value for evaluating RME in residential settings (USEPA 1991, 2014). It is based on 7 days/week and 50 weeks/year.

Exposure Duration

The exposure duration of 26 years is USEPA's standard default value for evaluating RME in residential settings (USEPA 1991). It is the 90th percentile for time spent at one residence.

Body Weight

The body weight of 15 and 80 kilograms (kg) are PADEP's (25 Pa Code § 250.307(d)) and USEPA's standard value for assessing exposure of children and adults, respectively (USEPA 2014).

Averaging Time

The averaging time for evaluating cancer risk is equal to a lifetime of 70 years, and the averaging time for evaluating noncancer risk is equal to the exposure duration (USEPA 1989).

5.2 Toxicity Assessment

In accordance with 25 Pa Code § 250.602(c)(3), this section presents the toxicity assessment. A toxicity assessment identifies potential adverse health effects that are associated with exposure to constituents and determines the dose response relationship between exposure and the occurrence of adverse effects. The toxicity values used in this risk assessment are compiled from USEPA's hierarchy of sources (USEPA 2003), as follows:



1. Integrated Risk Information System;
2. Provisional Peer Reviewed Toxicity Values; and
3. Other Toxicity Values.

When a toxicity value is not available from the first two tiers of the hierarchy, other USEPA and non-USEPA sources (e.g., Agency for Toxic Substances and Disease Registry) of toxicity values are considered.

The toxicity values used in the risk assessment and their sources are summarized in **Appendix A**. The toxicity values used in this risk assessment are current as of January 9, 2023.

5.2.1 Cancer Toxicity Values

For constituents that USEPA assessed prior to the Guidelines for Carcinogen Risk Assessment (USEPA 2005), USEPA considers constituents belonging to the following cancer weight of evidence groups as human carcinogens:

- Group A - Known Human Carcinogen: Sufficient evidence of carcinogenicity in humans;
- Group B1 - Probable Human Carcinogen: Limited evidence of carcinogenicity in humans;
- Group B2 - Probable Human Carcinogen: Sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans; and
- Group C - Possible Human Carcinogen: Limited evidence of carcinogenicity in animals and inadequate or lack of evidence in humans.

For constituents that USEPA assessed after the *Guidelines for Carcinogen Risk Assessment* (USEPA 2005), USEPA uses the following cancer weight of evidence groups:

- Carcinogenic to Humans
- Likely to be Carcinogenic to Humans
- Suggestive Evidence of Carcinogenic Potential
- Inadequate Information to Assess Carcinogenic Potential

As shown in **Appendix A**, some of the constituents in this risk assessment are not designated as Group A or as being “Carcinogenic to Humans”, which means USEPA acknowledges that there is either inadequate evidence or a lack of evidence that these constituents cause cancer in humans. Therefore, evaluating these constituents as human carcinogens in the risk assessment is conservative.

Cancer slope factors (SFs) and unit risk factors (URFs) for these constituents and their sources are shown in **Appendix A**. The oral SFs and inhalation URFs represent 95 percent upper confidence bounds on the probability of getting cancer over a lifetime per unit dose. As recognized by USEPA, there is significant scientific evidence that some of the SFs and URFs may be overly conservative and may ignore the potential existence of threshold doses. Nonetheless, they are used here as assessment tools.



5.2.2 Noncancer Toxicity Values

Constituents designated by USEPA as belonging to the cancer weight-of-evidence Group D (Not Classifiable as to Human Carcinogenicity) are considered noncarcinogens. Constituents not designated as belonging to any cancer group are also treated as noncarcinogens. Chronic and subchronic reference doses (RfDs) and chronic and subchronic inhalation reference concentrations (RfCs) and their sources are shown in **Appendix A**.

The oral RfDs and inhalation RfCs represent estimates of the daily exposure to the human population, including sensitive subpopulations (e.g., children), which are likely to be without an appreciable risk of deleterious effects during a lifetime. These RfDs and RfCs typically incorporate several safety factors to account for uncertainties in their derivation, which in combination often result in overall uncertainty factors of 1,000 or more. Furthermore, for many constituents, there is significant scientific debate about the validity of these RfDs and RfCs, and the association of these doses and concentrations to potential adverse health consequences. Nonetheless, the RfDs and RfCs are used here as conservative assessment tools.

5.2.3 Extrapolation of Toxicity Values

The USEPA sources of toxicity values listed above do not provide dermal toxicity values for any of the constituents. Therefore, oral toxicity values (i.e., oral SFs and RfDs) are used as dermal toxicity values in this risk assessment. Adjustments to the oral toxicity values, where appropriate, are made in this route-to-route extrapolation following USEPA guidance (USEPA 2004b).

The USEPA sources of toxicity values listed above do not provide inhalation toxicity values (URFs and RfCs) for all of the constituents. Route-to-route extrapolation from oral toxicity values was not performed to obtain inhalation toxicity values for these constituents, consistent with USEPA guidance on performing inhalation risk assessments (USEPA 2009).

Uncertainties introduced by using extrapolated toxicity values are discussed in Section 5.4.3.

5.3 Risk Characterization

The health significance of the potential exposures described in Section 5.1.1 is discussed in the following subsections. Section 5.3.1 describes the methods for estimating cancer risks and noncancer HIs. Section 5.3.2 discusses the risk estimates and the significance of the potential exposures for each receptor population/exposure scenario.

5.3.1 Cancer and Noncancer Risks

In accordance with 25 Pa Code § 250.602(c)(4), this section presents the risk characterization performed to conservatively quantify the cancer risk and noncancer HI for receptors potentially exposed to COCs in soil and groundwater at the Site.



The cancer risk associated with potential exposure to a carcinogenic constituent via ingestion and dermal contact is calculated by multiplying an estimate of the LADD for a particular exposure scenario by the cancer SF for the constituent as follows:

$$Risk = LADD \cdot SF$$

For the inhalation route, the cancer risk is calculated using the constituent concentration in air (C_{air}) and the URF, as follows:

$$Risk = URF \cdot C_{air} \cdot \frac{ET \cdot EF \cdot ED}{AT_c}$$

Where ET is exposure time, EF is exposure frequency, ED is exposure duration, and averaging time for carcinogens (AT_c) is the averaging time for carcinogens.

The noncancer hazard quotient (HQ) associated with potential exposure via incidental ingestion and dermal contact is calculated by dividing an estimate of the average daily dose by the RfD for the constituent as follows:

$$HQ = \frac{ADD}{RfD}$$

For the inhalation route, the HQ is calculated using C_{air} and the RfC, as follows:

$$HQ = \frac{C_{air}}{RfC} \cdot \frac{ET \cdot EF \cdot ED}{AT_{nc}}$$

Unit cancer risks and unit HQs are calculated for a unit constituent concentration (C_{unit}). C_{unit} is 1 milligram per kilogram (mg/kg) for soil and 1 milligram per liter (mg/L) for groundwater. Because risk estimates scale directly with the constituent concentration (except for cancer risk estimates at very high doses), these unit risks and unit HQs can be calculated once and used to calculate cancer and noncancer risk estimates efficiently for a large number of locations by multiplying the constituent concentrations for each location by the unit risks and unit HQs. Unit risks/HQs can also be used to derive RBSLs at a given target cancer risk level (TCRL) or target hazard quotient (THQ). The unit risks and unit HQs for all routes of exposure (incidental ingestion, dermal contact, vapor inhalation, and/or particulate inhalation) for a given receptor to constituents in a given environmental medium are conservatively summed to produce a single unit risk and unit HQ for each constituent. The cancer risk and noncancer HQ for a particular constituent i at a particular location are calculated as follows:

$$Risk_i = \frac{C_i \cdot UnitRisk_i}{C_{unit}}$$

$$HQ_i = \frac{C_i \cdot UnitHQ_i}{C_{unit}}$$

The media-specific cumulative cancer risk and noncancer HI from exposure to the combination of COPCs are estimated following USEPA (1989) guidance, as follows:



$$\text{Cumulative Risk} = \sum_i \text{Risk}_i$$

$$\text{Hazard Index} = \sum_i \text{HQ}_i$$

Where Risk_i is the estimated cancer risk for the i^{th} constituent and HQ_i is the HQ for the i^{th} constituent. This approach may result in estimates of media-specific cumulative cancer risk and HI that are more conservative than necessary. For example, different COPCs may cause different and unrelated noncancer health effects, so summing the HQs for their individual effects would overestimate the significance of their combined effects. Nonetheless, this approach is used here as a conservative assessment tool.

Estimated media-specific cumulative cancer risks for each receptor population identified in **Table 3** are compared to PADEP's risk management goals established in 25 Pa Code § 250.402(b). Specifically, cumulative cancer risks were compared to a risk of 1×10^{-4} while noncancer HIs are compared to an HI of 1.¹² Risk estimates equal to or below these goals represent levels which would not warrant risk management action.

In order to support site characterization decision-making, RBSLs from unit cancer risks and unit noncancer HQs are also calculated. Unit cancer risks/HQs for each route (i) of exposure (e.g., ingestion, dermal contact, inhalation) are used to derive RBSLs for each receptor-specific exposure scenario. RBSLs are calculated at a TCRL of 1×10^{-5} and a THQ of 0.1. The TCRL and THQ are used with consideration for the risk management goals established in 25 Pa Code § 250.402(b) for attainment of the Site-Specific Standard (i.e., a cumulative excess cancer risk greater than 1×10^{-4} and a noncancer HI¹³ greater than 1).

$$\text{Cancer RBC}_i = \frac{C_{\text{unit}} \cdot \text{TCRL}}{\text{UnitRisk}_i}$$

$$\text{Noncancer RBC}_i = \frac{C_{\text{unit}} \cdot \text{THQ}}{\text{UnitHQ}_i}$$

The RBCs for each route (i) are conservatively combined to give cancer and noncancer-based RBCs as follows:

$$\text{RBSL} = \left(\sum_i \text{RBSL}_i^{-1} \right)^{-1}$$

¹² Per PADEP's request, cumulative cancer risks and noncancer HIs greater than 1.0×10^{-4} and 1.0 respectively, have also been identified as potentially warranting risk management. While this approach has been used in support of this project, it is Terraphase's position that USEPA's risk assessment and risk management guidance, as well as PA's regulations and guidance indicate that rounding risk estimates to one significant figure is appropriate. Presenting risk characterization results with one significant figure is standard practice, and we are not aware of any scientific basis that would justify presenting the risk characterization results with more than one significant figure. As USEPA (2004) noted, doing so would imply a level of precision that cannot be justified.

¹³ As estimated from exposure to constituents with the same target organ or target effect.



Appendix B provides specific details on how the RBSLs for soil and groundwater were calculated using the general approach discussed above and the general assumptions provided in Sections 5.1 and 5.1.4.5.

5.3.2 Risk Characterization for Potentially Exposed Populations

The risk characterizations for routine workers, maintenance workers, and construction workers are summarized in this section. The lead exposure, nonpotable groundwater use, soil migration-to-groundwater, and groundwater migration-to-surface water pathway evaluations are also presented. Further details regarding the scenarios for potential human exposure are summarized in **Table 4**.

5.3.2.1 Routine Workers

Soil Contact and Soil Vapor Intrusion

As discussed in Section 5.1.1, routine workers could be exposed to soil in unpaved or uncovered areas during time spent outdoors. Routine workers could also be exposed to constituents in soil via inhalation of constituents if they were to volatilize into the outdoor air or migrate through cracks in the building foundation into indoor air. This section presents the results of risk calculations performed to characterize the risks associated with these exposures.

Potential exposure of routine workers to COPCs in soil is evaluated in this risk assessment by assuming the following two alternate hypothetical future cases:

- (1) All soil at the Site is uncovered and workers are assumed to be exposed to COPCs in soil while outdoors for the entire work-day through incidental ingestion, dermal contact, and inhalation of particulates and vapors in outdoor air, or
- (2) the soil is under an occupied generic commercial building to be constructed in the future, and workers are assumed to be exposed to COPCs in the soil via inhalation of vapor in indoor air (vapor intrusion) for the entire work-day.

Calculating risks for these alternate hypothetical cases is conservative and efficient because it avoids the need to prorate the portion of the day spent indoors and/or outdoors, and risk estimates for any combination of indoor and outdoor time periods would not exceed the higher of the risk estimates for the two alternative hypothetical cases.

Potential exposures for each hypothetical future case are evaluated by initially calculating upper-bound estimates of RME cumulative cancer risk and HIs to streamline the risk assessment. These estimates are calculated using the highest observed concentrations for all constituents detected in soil regardless of depth. These estimates are conservative upper-bound estimates because the site-related RME risks for an area would be lower if they were calculated using: (1) concentrations representative of the average concentrations to which receptors would be exposed at the area; and (2) site-specific exposure factors that account for the magnitude, frequency, and duration of exposures appropriate for the area.

The upper-bound estimates of cumulative cancer risk and HI for potential future exposure of routine workers for each alternate hypothetical case (i.e., all-day exposure to COPCs in soil during outdoor activities or all-day exposure to soil COPCs via vapor intrusion) are presented in **Table 5**.



Outdoor Direct Contact Exposure to Soil

As shown in **Table 5**, for the hypothetical case of a routine worker exposed to COPCs in soil during outdoor activities, the upper-bound cumulative cancer risk (4×10^{-6}) and noncancer HI (0.2) estimates are below PADEP's cumulative cancer and noncancer HI risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential routine worker exposure to COPCs in soil via direct contact while outdoors would not result in unacceptable risk.

Vapor Intrusion Exposure from Soil (into a Future Nonresidential Building)

As also shown in **Table 5**, for the hypothetical case of a routine worker exposed to COPCs in soil via vapor intrusion, the upper-bound cumulative cancer risk (2×10^{-4}) and noncancer HI (30) estimates are greater than PADEP's cumulative cancer and noncancer HI risk management goals of 1×10^{-4} and 1, respectively. As shown in **Appendix A, Attachment 8**, the unacceptable upper-bound cumulative cancer risk estimate is predominantly driven by benzene and naphthalene. The potentially unacceptable upper-bound HI is predominantly driven by benzene, cumene, ethyl benzene, 124-TMB, 135-TMB, xylenes (total), and naphthalene.

To support and guide risk management decisions (e.g., further sampling, further assessment, vapor mitigation, remediation, etc.), upper-bound estimates of cumulative cancer risk and HIs were also calculated on a point-by-point basis, using the highest observed concentrations for all COPCs from any depth at each location. As discussed in Section 5.1.2.1, where a COPC is non-detect at a location but detected within the specific exposure media at the Site, $\frac{1}{2}$ the analytical limit at the location was used.

As shown on **Table 6 and Figure 6**, 12 soil sample locations (i.e., PB-826-14, PB-826-15, PB-840-09, PB-847-15, PB-848-04, PB-848-06, PB-848-15, PB-881-10, PB-882-16, PB-884-09, PB-884-15 and PB-884-25) exhibited a cancer risk estimate or noncancer HI estimate greater than the risk management goal. Based upon this risk characterization, further considerations for risk management action due to routine worker vapor intrusion exposure to COPCs in soil (i.e., benzene, cumene, ethyl benzene, 124-TMB, 135-TMB, xylenes (total), and naphthalene) at these locations would be warranted.

Groundwater Vapor Intrusion Exposure (into a Future Nonresidential building)

Routine workers could be exposed to COPCs in shallow groundwater to the extent that such COPCs volatilize and migrate through cracks in future building foundations into indoor air.

The cumulative cancer risk and noncancer HI estimates for routine worker exposure to groundwater via vapor intrusion are calculated using the highest observed concentrations for all constituents detected in groundwater.

As shown in **Table 7**, for the hypothetical case of a routine worker exposed to COPCs in groundwater via vapor intrusion, the upper-bound cumulative cancer risk (1×10^{-6}) and noncancer HI (2×10^{-2}) estimates are below PADEP's cumulative cancer and noncancer HI risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential routine worker exposure indoors to COPCs in groundwater via vapor intrusion would not result in unacceptable risk.



Groundwater Volatilization to Outdoor Air Exposure

Routine workers could be exposed to COPCs in shallow groundwater to the extent that such COPCs volatilize and migrate into outdoor air. As shown in **Table 7**, the upper-bound cumulative cancer risk (9×10^{-9}) and noncancer HI (1×10^{-4}) estimates are below PADEP's cumulative cancer and noncancer HI risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential routine worker exposure to COPCs in groundwater via volatilization to outdoor air would not result in unacceptable risk.

5.3.2.2 Maintenance Workers

Outdoor Direct Contact Exposure to Soil

As discussed in Section 5.1.1, maintenance workers could be exposed to COPCs in soil in the future during regular maintenance activities (e.g., landscaping, underground utility repairs, etc.) following site redevelopment activities. This section presents the results of risk calculations performed to characterize the risks associated with these exposures.

Potential exposures are evaluated by calculating upper-bound estimates of RME cumulative cancer risk and HIs to streamline the risk assessment. These estimates are calculated using the highest observed concentrations for all constituents detected in soil regardless of depth.

The upper-bound estimates of cumulative cancer risk and HI for potential exposure of maintenance workers to soil are summarized on **Table 5**. As shown, the upper-bound estimates of cumulative cancer risk (4×10^{-7}) and noncancer HI (0.07) are below the risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential maintenance worker exposure to COPCs in soil would not result in unacceptable risk.

Outdoor Direct Contact Exposure to Groundwater

Maintenance workers could be directly exposed to COPCs in shallow groundwater during occasional subsurface maintenance or excavation activities that encounter groundwater. Exposure to groundwater could include incidental ingestion, dermal contact, and inhalation of vapors in outdoor air.

As shown in **Table 7**, for the hypothetical case of a maintenance worker exposed to COPCs in groundwater via direct contact, the upper-bound cumulative cancer risk is 1×10^{-6} and the noncancer HI is 5×10^{-2} , below the risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential maintenance worker exposure to COPCs in groundwater via direct contact would not result in unacceptable risk.

5.3.2.3 Construction Workers

Outdoor Direct Contact Exposure to Soil

As discussed in Section 5.1.1, construction workers could be exposed to soil in the future during site redevelopment activities. This section presents the results of risk calculations performed to characterize the risks associated with these exposures.



Potential exposures are evaluated by calculating upper-bound estimates of RME cumulative cancer risk and HIs to streamline the risk assessment. These estimates are calculated using the highest observed concentrations for all constituents detected in soil regardless of depth.

The upper-bound estimates of cumulative cancer risk and HI for potential exposure of construction workers to soil are summarized on **Table 5**. As shown, the upper-bound estimates of cumulative cancer risk (1×10^{-6}) and noncancer HI (0.9) are below the risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential construction worker exposure to COPCs in soil would not result in unacceptable risk.

Outdoor Direct Contact Exposure to Groundwater

During redevelopment or site construction activities that encounter groundwater, construction workers could be directly exposed to COPCs in shallow groundwater via incidental ingestion, dermal contact, and inhalation of vapors in outdoor air.

As shown in **Table 7**, for the hypothetical case of a maintenance worker exposed to COPCs in groundwater via direct contact, the upper-bound cumulative cancer risk is 1×10^{-7} and the noncancer HI is 2×10^{-2} , below the risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential construction worker exposure to COPCs in groundwater via direct contact would not result in unacceptable risk.

5.3.2.4 Off-Site Resident

Outdoor Direct Contact Exposure to Soil

As discussed in Section 5.1.1, off-site residents could be exposed to on-site soil if airborne particulates and vapor from on-site soil were to migrate off the Site. Potential exposures are evaluated by calculating upper-bound estimates of RME cumulative cancer risk and HIs to streamline the risk assessment. These estimates are calculated using the highest observed concentrations for all constituents detected in soil regardless of depth.

As shown in **Table 5**, for the hypothetical case of off-site residential inhalation exposure to COPCs in airborne particulates and vapor from on-site soil, the upper-bound cumulative cancer risk (7×10^{-6}) and noncancer HI (0.7) estimates are below PADEP's cumulative cancer and noncancer HI risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential off-site resident exposure to COPCs in soil via direct contact while outdoors would not result in unacceptable risk.

Groundwater Vapor Intrusion Exposure (into a Future Residential Building)

Off-site residents could be exposed to COPCs in shallow groundwater that migrate off-site and to the extent that such COPCs volatilize and migrate through cracks in future building foundations into indoor air. The cumulative cancer risk and noncancer HI estimates for off-site resident exposure to groundwater via vapor intrusion are calculated using the highest observed concentrations for all constituents detected in groundwater.

As shown in **Table 7**, for the hypothetical case of an off-site resident exposed indoors to COPCs in groundwater via vapor intrusion, the upper-bound cumulative cancer risk (2×10^{-5}) and noncancer HI



(3×10^{-1}) estimates are below PADEP's cumulative cancer and noncancer HI risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential off-site resident exposure indoors to COPCs in groundwater via vapor intrusion would not result in unacceptable risk.

5.3.2.5 Nonpotable Groundwater Use

Potential exposures to COPCs in groundwater via nonpotable groundwater use are evaluated using a hypothetical scenario where groundwater is used to fill a backyard wading pool ("kiddie" pool), described in **Appendix A**. This scenario represents a reasonable worst case exposure scenario in which the estimated exposure is expected to be higher than those associated with other nonpotable uses (e.g., watering lawns, washing cars). Potential routes of exposure in this scenario include incidental ingestion, dermal contact, and inhalation of vapors.

The cumulative cancer risk and noncancer HI estimates for receptor exposure to groundwater via nonpotable use are calculated using the highest observed concentrations for all constituents detected in groundwater.

As shown in **Table 7**, for exposure to COPCs in groundwater via nonpotable use, the upper-bound cumulative cancer risk (2×10^{-5}) and noncancer HI (0.1) estimates are equal to or below the risk management goals of 1×10^{-4} and 1, respectively. Therefore, potential exposure of receptors to COPCs in groundwater via nonpotable groundwater use would not result in unacceptable risk.

5.3.2.6 Soil Migration-to-Groundwater Pathway

In order to evaluate the potential for subsurface soil to leach unacceptable concentrations to groundwater in the future, RBSLs were developed in accordance with the methodologies described in USEPA's (1996b) Soil Screening Guidance: User's Guide. Additional details describing the derivation of these screening levels are presented in Section 5.1.3.9. Upper-bound cancer risk and noncancer HI estimates were calculated by scaling off of the soil migration-to-groundwater RBSLs.

Soil migration-to-groundwater cumulative cancer risk and HI estimates were calculated for the following scenarios:

- Routine worker exposure to COPCs in groundwater via volatilization to outdoor air and vapor intrusion
- Construction worker exposure to COPCs in groundwater via direct contact
- Off-site resident exposure to COPCs in groundwater via vapor intrusion
- Receptor exposure to COPCs in groundwater via nonpotable groundwater use

As shown in **Table 5**, the upper-bound cumulative cancer risk and HI estimate for each of these scenarios are below the risk management goals of 1×10^{-4} and 1, respectively. The upper-bound cumulative cancer risk and HI estimate for soil migration-to-groundwater protective of nonpotable groundwater use are 1×10^{-6} and 0.03, respectively. The upper-bound cumulative cancer risk and HI estimates for soil migration-to-groundwater protective of routine worker groundwater exposure via volatilization to outdoor air are not calculated due to non-detect data or lack of a screening level. The upper-bound cumulative cancer risk and HI estimates for soil migration-to-groundwater protective of



routine worker groundwater exposure via vapor intrusion are 4×10^{-8} and 0.003, respectively. The upper-bound cumulative cancer risk and HI estimates for soil migration-to-groundwater protective of construction worker exposure to COPCs in groundwater via direct contact are 4×10^{-9} and 0.009, respectively. The upper-bound cumulative cancer risk and HI estimates for soil migration-to-groundwater protective of off-site resident exposure to COPCs in groundwater via vapor intrusion are 2×10^{-6} and 0.1.

Therefore, potential soil migration-to-groundwater would not result in unacceptable risk.

5.3.2.7 Groundwater Migration-to-Surface Water Pathway

In order to evaluate the potential for COPCs observed in groundwater in the area to adversely impact surface water in the future as a result of groundwater migration and discharge to surface water, COPC concentrations observed in the source area wells installed by PESRM were compared to the RBSLs developed for this pathway (**Appendix B**).

As shown in **Table 3**, the concentrations for COPCs detected in groundwater do not exceed the MtSW screening level. As a result, COPCs in groundwater are at concentrations that do not pose an unacceptable risk to receptors via migration to surface water.

5.3.2.8 Exposure to Lead in Soil

Exposure of routine workers, maintenance workers, and construction workers to lead in soil during outdoor activities is evaluated using a screening level of 2,520 mg/kg. This screening level is calculated following USEPA guidance (USEPA 2003), including updates (USEPA 2009, 2017a). The derivation of the industrial soil screening level is presented in **Appendix B**. As shown on **Table 2**, the concentrations of lead in soil range from 1 mg/kg to 45 mg/kg and are all below the RBSL. Therefore, potential worker exposure to lead concentrations in soil at the Site would not result in unacceptable risk.

5.4 Uncertainty Analysis

While the Risk Assessment is conducted in accordance with PADEP and USEPA guidance, there may be some uncertainties associated with certain aspects of the risk assessment process. In general, the methods and assumptions used to complete the Risk Assessment are very conservative by design to account for such uncertainties. This section discusses potential uncertainties in the risk characterization and the potential impact (or lack thereof) such uncertainties could have on risk management decision-making.

5.4.1 Exposure Concentrations

The exposure concentrations in this risk assessment are predominantly based on the highest concentrations of COPCs detected in soil and groundwater or conservative refinements to the exposure concentrations (e.g., UCLs), performed only when an upper-bound estimate of the RME media-specific cumulative cancer risk or noncancer HI exceeds the risk management goals. This streamlines the risk assessment by avoiding the calculation of refinements that would not materially change the risk



assessment conclusions, the need for risk management action, or require additional sampling/characterization to support the refinements. However, this approach likely overestimates the cumulative cancer risk and noncancer HI estimates because these estimates are based on maximum detected concentrations. The use of maximum detected concentrations introduces more conservatism than necessary for RME estimates because it assumes simultaneous worst-case exposure. The overestimation of exposure concentrations results in risk and HI estimates that are closer to, or in excess of, PADEP's risk management goals than they would be if refinements were used.

Most exposure concentrations that are based on mathematical modeling of constituent transfer from soil or groundwater to air are conservative for the same reasons discussed above, since the model estimates are predominantly based on the use of maximum detected concentrations in soil or groundwater. In addition, some model estimates are conservative because they do not account for the reduction of constituent concentration or mass in the soil or groundwater as constituents transfer from these media. Even for models that account for reduction of mass in the soil (e.g., Jury model), risk calculations for ingestion and dermal contact with soil assume soil concentrations remain constant, which is consistent with USEPA and PADEP practice but contradicts the mass conservation principle. As a result, risk estimates that are based on the sum of risk estimates from soil and soil vapor/particulates are more conservative than necessary for RME estimates. These include almost all of the risk estimates discussed in Section 5.3.2.

Another factor that contributes to the likely overestimation of exposure concentrations is the assumption that the COPCs are entirely site-related. The concentrations of all constituents are assumed to be site-related in this risk assessment because the field investigation did not quantify site-specific background levels (i.e., concentrations not associated with a release from the Site, for example, fill-related constituent concentrations).

Considering all these factors, the exposure concentrations used in this risk assessment are more conservative than necessary for RME estimates and therefore likely result in an overestimation of risk and/or hazard.

5.4.2 Exposure Factors

As discussed in Section 5.1.4, most of the exposure factors used in the risk assessment are high-end (i.e., 90th to 95th percentile) estimates of the magnitude, frequency, and duration of potential exposures. When several such high-end factors are multiplied, the resulting estimates of dose will be higher than the 90th percentile of the distribution of exposures in the potentially exposed population and could be higher than the exposure to the maximally exposed individual, particularly when such exposure factors are combined with exposure concentrations that are based on maximum detected concentrations (as discussed above). The use of upper-bound exposure factors is likely to result in an overestimate of potential risks and/or hazards.

5.4.3 Extrapolated Toxicity Values

As discussed in Section 5.1.4.5, the dermal toxicity values used in the risk assessment are oral toxicity values that were extrapolated to the dermal route without constituent-specific judgment regarding



whether such extrapolation might be appropriate for a particular constituent. This is consistent with USEPA guidance (2004b) and is a conservative approach to ensure that potential risk via the dermal route is not overlooked. However, some constituents might exhibit different degrees of toxicity for the dermal route relative to the oral route. For such constituents, the extrapolation approach used in the risk evaluation could introduce uncertainty.

5.4.4 Risk Characterization

The summation of cancer risks and HQs for multiple COPCs is based upon USEPA guidance (1989) to assume dose additivity, which means that constituents in a mixture are assumed to have no synergistic or antagonistic interactions and each constituent has the same mode of action and elicits the same health effects. In general, this approach can introduce significant uncertainty with the over- or underestimation of risk and/or hazard. However, because only a few constituents contribute to the cumulative risk and HI estimates, the impact of this uncertainty on the outcome of the risk assessment is likely to be minimal.

5.5 Summary

This report documents the methodology and results of a site-specific human health risk assessment performed to support a demonstration that conditions at Tank Group 04 meet the tank closure performance standard in accordance with the Storage Tank and Spill Prevention Act (Act 32). The potential risks are characterized based upon the RME under the current and reasonably expected future land and groundwater uses at and around the Site. The scope of the human health risk assessment calculations is summarized by the scenarios for potential human exposure as shown on **Table 4**. All soil and groundwater data collected in accordance with the Work Plan and SAP were considered in this Risk Assessment.

Tables 5 through 9 present the results of the soil and groundwater risk calculations and which exposure scenarios would present an unacceptable risk and would warrant risk management action. Likewise, **Figures 6** present the spatial distribution of potentially unacceptable risks for soil, and the general locations where risk management action would be warranted due to unacceptable risks/HIs for specific exposure scenarios.

As presented on **Table 5**, locations with soil COPC concentrations that could result in cumulative cancer risk or HI estimates above the risk management goal for potential routine workers via vapor intrusion from soil include PB-826-14, PB-826-15, PB-840-09, PB-847-15, PB-848-04, PB-848-06, PB-848-15, PB-881-10, PB-882-16, PB-884-09, PB-884-15 and PB-884-25. These unacceptable cancer risk and HI estimates are predominately driven by benzene, cumene, ethyl benzene, 124-TMB, 135-TMB, xylenes (total), and naphthalene. However, as discussed in Section 3.1 of the Report, exposure to soil via vapor intrusion is evaluated in this Risk Assessment but risk management will be addressed following additional characterization/evaluation and eventually through pathway elimination.

Aside from soil vapor intrusion exposure, the results of the site-specific risk assessment demonstrate that COPC concentrations in soil or groundwater in the area do not pose an unacceptable risk to human health or the environment and do not warrant remedial action.



6 Site-Specific Remediation Standards

As discussed in Section 5.3, the Risk Assessment identifies potentially unacceptable risk/HI to routine workers (via vapor intrusion) from exposure to constituents of concern (COC) in soil via vapor intrusion in the area of Tank Group 04. The potentially unacceptable risk/HI from exposure to soil in the area is driven by the following COC:

- Benzene
- Cumene
- Ethyl Benzene
- 124-TMB
- 135-TMB
- Xylenes (total)
- Naphthalene

No unacceptable risk/HI to routine workers, maintenance workers, construction workers or off-site residents from exposure to COPCs in groundwater were identified in the area of Tank Group 04.

As discussed in Section 7.3.3 of the Report, potentially unacceptable vapor intrusion exposures will be managed separately following additional characterization/evaluation and eventually through pathway elimination.

7 Summary and Conclusions

This Risk Assessment was prepared in support of the *Site Characterization Report* for Tank Group 04 to document the methodology and results of a site-specific human health risk assessment performed in accordance with 25 Pa. Code § 250.409, to support a demonstration that conditions at the Site meet the tank closure performance standard in accordance with the Storage Tank and Spill Prevention Act (Act 32).

As discussed in Section 3, based on the review of the soil and groundwater concentrations in comparison to the RBSLs and the spatial distribution of concentrations greater than these levels, the soil and groundwater sampling performed adequately defines the horizontal and vertical extent of COPCs to support a site-specific risk assessment.

Using soil and groundwater data collected in accordance with the Work Plan and SAP and the methodologies as described in Section 5, cumulative cancer risk and noncancer HI estimates for the exposure of current and reasonably expected future receptor populations to COPCs in soil and groundwater were calculated. Cumulative cancer risk and noncancer HI estimates for the exposure of routine workers to COC in soil via vapor intrusion represent the only exposure scenario resulting in cumulative cancer risk/HI greater than the risk management goals used by PADEP.



The risk assessment demonstrates that, aside from vapor intrusion exposure which is expected to be managed separately following additional characterization/evaluation and eventually through pathway elimination, COPC concentrations in the area do not pose an unacceptable risk to human health or the environment and do not warrant remedial action.

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Table 1**Chemicals of Potential Concern**

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Detected in Soil	Detected in Groundwater
INORG	Lead	7439-92-1	Y	Y
SVOC	Anthracene	120-12-7	Y	Y
SVOC	Benzo(a)anthracene	56-55-3	Y	Y
SVOC	Benzo(a)pyrene	50-32-8	Y	Y
SVOC	Benzo(b)fluoranthene	205-99-2	Y	Y
SVOC	Benzo(g,h,i)perylene	191-24-2	Y	Y
SVOC	Chrysene	218-01-9	Y	Y
SVOC	Fluorene	86-73-7	Y	Y
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	Y	Y
SVOC	Naphthalene	91-20-3	Y	Y
SVOC	Phenanthrene	85-01-8	Y	Y
SVOC	Pyrene	129-00-0	Y	Y
VOC	Benzene	71-43-2	Y	Y
VOC	Cumene	98-82-8	Y	Y
VOC	1,2-Dibromoethane	106-93-4	N	Y
VOC	1,2-Dichloroethane	107-06-2	N	Y
VOC	Ethyl Benzene	100-41-4	Y	Y
VOC	Methyl tert-butyl ether	1634-04-4	Y	Y
VOC	Toluene	108-88-3	Y	Y
VOC	1,2,4-Trimethylbenzene	95-63-6	Y	Y
VOC	1,3,5-Trimethylbenzene	108-67-8	Y	Y
VOC	Xylenes (total)	1330-20-7	Y	Y

Notes:

Y - Detected.

N - Not Detected.

Table 2
Soil Screening Summary
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Matrix	Chem Group	Chemical	CASRN	Analyzed	Detected	Min Detected (mg/kg)	Mean Detected (mg/kg)	Max Detected (mg/kg)	Routine Worker Direct Contact (mg/kg)	Ratio of Max Detect to Routine Worker Direct Contact	Routine Worker Vapor Intrusion (mg/kg)	Ratio of Max Detect to Routine Worker Vapor Intrusion	Construction Worker Direct Contact (mg/kg)	Ratio of Max Detect to Construction Worker Direct Contact	Soil MtGW Screening Level (mg/kg)	Ratio of Max Detect to Soil MtGW	Soil GW MtSW Screening Level (mg/kg)	Ratio of Max Detect to Soil GW MtSW
Soil	VOC	Benzene	71-43-2	267	61	0.00019	0.34	7.1	63	0.11	0.46	15	8.7	0.82	98	0.072		
Soil	VOC	Cumene	98-82-8	267	80	0.00010	0.65	15	1000	0.015	6.1	2.5	87	0.17	1000	0.015	1040	0.014
Soil	VOC	Ethyl Benzene	100-41-4	267	50	0.00014	2.7	66	2300	0.029	15	4.4	1300	0.051	820	0.080		
Soil	VOC	Methyl tert-butyl ether	1634-04-4	267	30	0.00026	0.0028	0.020	2400	0.000008	16	0.0013	390	0.000051	5900	0.0000034		
Soil	VOC	Toluene	108-88-3	263	19	0.00069	2.0	15	8000	0.0019	76	0.20	650	0.023	9800	0.0015		
Soil	VOC	1,2,4-Trimethylbenzene	95-63-6	267	58	0.00034	5.1	92	180	0.51	0.92	100	70	1.3	250	0.37		
Soil	VOC	1,3,5-Trimethylbenzene	108-67-8	267	59	0.00025	1.6	33	220	0.15	0.92	36	99	0.33	240	0.14		
Soil	VOC	Xylenes (total)	1330-20-7	267	54	0.00090	8.3	200	240	0.82	1.5	131	51	3.9	340	0.58		
Soil	SVOC	Anthracene	120-12-7	263	29	0.00075	0.30	3.7	46000	0.000080			46000	0.000080				
Soil	SVOC	Benzo(a)anthracene	56-55-3	263	54	0.00094	0.19	4.5	430	0.010			3200	0.0014				
Soil	SVOC	Benzo(a)pyrene	50-32-8	263	31	0.00200	0.36	7.2	43	0.17			7.7	0.94				
Soil	SVOC	Benzo(b)fluoranthene	205-99-2	263	42	0.00078	0.23	4.4	430	0.010			3200	0.0014				
Soil	SVOC	Benzo(g,h,i)perylene	191-24-2	263	36	0.0020	0.21	5.2	4600	0.0011			14000	0.00037				
Soil	SVOC	Chrysene	218-01-9	263	59	0.00066	0.22	4.4	43000	0.00010			320000	0.000014				
Soil	SVOC	Fluorene	86-73-7	263	49	0.015	0.73	14	6200	0.0023			18000	0.00078				
Soil	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	9	6	0.031	0.070	0.11	430	0.00026			3200	0.000034				
Soil	SVOC	Naphthalene	91-20-3	267	56	0.0094	1.0	9.3	41	0.23	0.54	17	6.0	1.6	27	0.34		
Soil	SVOC	Phenanthrene	85-01-8	263	74	0.00093	1.1	29	4600	0.0063			14000	0.0021				
Soil	SVOC	Pyrene	129-00-0	263	71	0.0014	0.20	2.9	4600	0.00063			14000	0.00021				
Soil	INORG	Lead	7439-92-1	267	266	1.0	45	3200	2520	1.3			2520	1.3	45000	0.071	45010	0.071

Notes:
Only constituents detected are shown.
The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the criteria for Xylenes (total).
Ratios of concentration to the RBSLs greater than 1 are shaded in bold.
Chem Group - chemical group; INORG - metals; SVOC - semi-volatile organic compounds; VOC - volatile organic compounds; WQ - water quality

Table 3
Groundwater Screening Summary

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Matrix	Wellzone	Chem Group	Chemical	CASRN	Meas Basis	Analyzed	Detected	Min Detected (mg/L)	Mean Detected (mg/L)	Max Detected (mg/L)	Nonpotable Groundwater Use (mg/L)	Ratio of Max Detect to Nonpotable Groundwater Use	Routine Worker Volatilization to Outdoor Air (mg/L)	Ratio of Max Detect to Routine Worker Volatilization to Outdoor Air	Routine Worker Vapor Intrusion (mg/L)	Ratio of Max Detect to Routine Worker Vapor Intrusion	Construction Worker Direct Contact (mg/L)	Ratio of Max Detect to Construction Worker Direct Contact	Off-Site Resident Vapor Intrusion (mg/L)	Ratio of Max Detect to Off-Site Resident Vapor Intrusion	Groundwater Migration to Surface Water (mg/L)	Ratio of Max Detect to Groundwater Migration to Surface Water
Groundwater	unconfined	VOC	Benzene	71-43-2	T	4	1	0.58	0.58	0.58	0.30	1.9	550	0.0011	3.8	0.15	4.0	0.15	0.25	2.3	130	0.0045
Groundwater	unconfined	VOC	Cumene	98-82-8	T	4	2	0.00028	0.038	0.075	37	0.0020	9100	0.000082	63	0.0012	30	0.0025	4.0	0.019	2.6	0.029
Groundwater	unconfined	VOC	Ethyl Benzene	100-41-4	T	4	1	0.11	0.11	0.11	2.0	0.055	22000	0.000050	150	0.00073	40	0.0028	9.7	0.011	13	0.0085
Groundwater	unconfined	VOC	Toluene	108-88-3	T	4	1	0.011	0.011	0.011	25	0.00044	100000	0.0000011	700	0.000016	200	0.000055	45	0.00024	52	0.00021
Groundwater	unconfined	VOC	1,2,4-Trimethylbenzene	95-63-6	T	4	1	0.054	0.054	0.054	8.7	0.0062	1400	0.000039	9.7	0.0056	15	0.0036	0.63	0.086	33	0.0016
Groundwater	unconfined	VOC	1,3,5-Trimethylbenzene	108-67-8	T	4	1	0.013	0.013	0.013	8.8	0.0015	1300	0.000010	9.1	0.0014	15	0.00087	0.59	0.022	71	0.00018
Groundwater	unconfined	VOC	Xylenes (total)	1330-20-7	T	4	1	0.19	0.19	0.19	3.7	0.050	1900	0.00010	13	0.014	17	0.011	0.86	0.22	210	0.00089
Groundwater	unconfined	SVOC	Anthracene	120-12-7	T	4	1	0.00011	0.00011	0.00011	240	0.0000046					19000	0.000000058			40	0.000028
Groundwater	unconfined	SVOC	Benzo(a)anthracene	56-55-3	T	4	3	0.000030	0.00010	0.00018	0.10	0.0018					1400	0.0000013			0.013	0.014
Groundwater	unconfined	SVOC	Fluorene	86-73-7	T	4	1	0.00092	0.00092	0.00092	97	0.0000095					7800	0.0000012			7.0	0.00013
Groundwater	unconfined	SVOC	Naphthalene	91-20-3	T	4	1	0.0094	0.0094	0.0094	0.39	0.024	120	0.000078	0.88	0.011	0.28	0.034	0.067	0.14	43	0.00022
Groundwater	unconfined	SVOC	Phenanthrene	85-01-8	T	4	1	0.00025	0.00025	0.00025	73	0.0000034					5800	0.00000043			1.0	0.00025
Groundwater	unconfined	SVOC	Pyrene	129-00-0	T	4	1	0.00006	0.000060	0.000060	50	0.0000012					5800	0.00000010			3.0	0.00020

Notes:

Only chemicals detected in the area are shown.

The concentrations for the Xylene isomers (m/p and o) were summed before comparing to the criteria for Xylenes (total).

Ratios of concentration to the RBSLs greater than 1 are shaded in bold.

Chem Group - chemical group; INORG - metals; SVOC - semi-volatile organic compounds; VOC - volatile organic compounds

Meas Basis - measured basis; T = total, D = dissolved

Table 4

Scenarios for Potential Human Exposure

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Receptor Population	Exposure Medium	Exposure Route	Potential Current Exposure?	Potential Future Exposure?	Comments
On-Site/Off-Site					
Routine Workers	surface soil	incidental ingestion of and dermal contact with surface soil	No	Yes	Currently, routine workers are not at the Site as the Facility is currently undergoing decommissioning, cleanup and redevelopment. Following redevelopment, exposure to surface soil through incidental ingestion, dermal contact, and inhalation of vapor and particulates is possible in areas without ground cover and in those areas where ground cover may be removed in the future. Following redevelopment, most of the soil at the Site will be located under building slabs, drive aisles, parking lots, new roadways, and other paved areas. Buildings in areas where potentially unacceptable vapor intrusion risks are identified will be managed via engineering controls (e.g., vapor barriers or other mitigation controls).
		inhalation of soil-derived vapors and airborne particulates (wind erosion) in outdoor air	No	Yes	
		inhalation of soil-derived vapors that migrate through building foundations into indoor air	No	Yes	
	subsurface soil	inhalation of soil-derived vapors in outdoor air	No	Yes	Following redevelopment, exposure to surface soil through incidental ingestion, dermal contact, and inhalation of vapor and particulates is possible in areas without ground cover and in those areas where ground cover may be removed in the future. Following redevelopment, most of the soil at the Site will be located under building slabs, drive aisles, parking lots, new roadways, and other paved areas. Buildings in areas where potentially unacceptable vapor intrusion risks are identified will be managed via engineering controls (e.g., vapor barriers or other mitigation controls).
		inhalation of soil-derived vapors that migrate through building foundations into indoor air	No	Yes	
	groundwater	incidental ingestion of and dermal contact with groundwater and inhalation of groundwater-derived vapors during use of groundwater for drinking water	No	No	Routine worker activities do not involve contact with groundwater. Groundwater is not currently used for potable purposes at the Site. Groundwater is not expected to be used for potable purposes in the future as the First Amendment to the Consent Order and Agreement restricts the use of groundwater at the Facility for any purpose except for sampling, treatment and/or other remedial activities, eliminating future potable or non-potable use.
		incidental ingestion of and dermal contact with groundwater and inhalation of groundwater-derived vapors during use of groundwater for purposes other than drinking water	No	No	
		inhalation of groundwater-derived vapors in outdoor air	No	Yes	Following redevelopment, exposure through inhalation of vapor is possible in areas without ground cover and in those areas where ground cover may be removed in the future. Buildings in areas where potentially unacceptable vapor intrusion risks are identified will be managed via engineering controls (e.g., vapor barriers or other mitigation controls).
		inhalation of groundwater-derived vapors that migrate through building foundations into indoor air	No	Yes	
	LNAPL	inhalation of vapors in outdoor air	No	Yes	Following redevelopment, exposure through inhalation of vapor is possible in areas without ground cover and in those areas where ground cover may be removed in the future. Buildings in areas where potentially unacceptable vapor intrusion risks are identified will be managed via engineering controls (e.g., vapor barriers or other mitigation controls).
inhalation of vapors that migrate through building foundations into indoor air		No	Yes		
Maintenance Workers	surface soil	incidental ingestion of and dermal contact with soil	No	Yes	Currently, maintenance workers are not at the Site as the Facility is currently undergoing decommissioning, cleanup and redevelopment.
		inhalation of soil-derived vapors and airborne particulates in work-space outdoor air	No	Yes	
	subsurface soil	incidental ingestion of and dermal contact with soil	No	Yes	Following redevelopment, maintenance workers could be exposed (1) to surface and subsurface soil during occasional excavations, or (2) to shallow groundwater or LNAPL during occasional excavations that encounter the water table, that are not covered by the health and safety protocols established by the Site health and safety program.
		inhalation of soil-derived vapors and airborne particulates in work-space outdoor air	No	Yes	
	groundwater	incidental ingestion of and dermal contact with exposed groundwater	No	Yes	
		inhalation of vapors from exposed groundwater in work-space outdoor air	No	Yes	
	LNAPL	dermal contact with exposed NAPL	No	Yes	
inhalation of vapors from exposed NAPL in work-space air		No	Yes		
Construction (Redevelopment) Workers	surface soil	incidental ingestion of and dermal contact with soil	Yes	Yes	
	subsurface soil	inhalation of soil-derived vapors and airborne particulates in work-space air	Yes	Yes	
	surface soil	incidental ingestion of and dermal contact with soil	Yes	Yes	
	subsurface soil	inhalation of soil-derived vapors and airborne particulates in work-space air	Yes	Yes	
	groundwater	incidental ingestion of and dermal contact with exposed groundwater	Yes	Yes	
		inhalation of vapors from exposed groundwater in work-space air	Yes	Yes	
	LNAPL	inhalation of vapors from exposed NAPL in work-space air	Yes	Yes	
		inhalation of vapors from exposed NAPL in work-space air	Yes	Yes	

Table 4

Scenarios for Potential Human Exposure

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Receptor Population	Exposure Medium	Exposure Route	Potential Current Exposure?	Potential Future Exposure?	Comments
On-Site/Off-Site (cont.)					
Trespassers	surface soil	incidental ingestion of and dermal contact with surface soil	Yes	Yes	Access to the Site is currently restricted by fencing and security measures. While limited, exposure to surface soil is possible in areas without ground cover, and in those areas where ground cover may be removed in the future. Following redevelopment, most of the soil at the Site will be located under building slabs, drive aisles, parking lots, new roadways, and other paved areas. Trespasser exposure to soil, groundwater, and LNAPL will be qualitatively evaluated by using routine worker exposure estimates as a surrogate.
		inhalation of soil-derived vapors and airborne particulates (wind erosion) in outdoor air	Yes	Yes	
	subsurface soil	inhalation of soil-derived vapors in outdoor air	Yes	Yes	
	groundwater	inhalation of groundwater-derived vapors in outdoor air	Yes	Yes	
	LNAPL	inhalation of vapors in outdoor air	Yes	Yes	

Table 5

Upper-Bound Cumulative Cancer Risk and Noncancer Hazard Index (HI) for Receptor Exposure to Soil

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Routine Worker				Maintenance Worker		Construction Worker		Off-Site Resident		Soil Migration to GW									
	Outdoor Activities		Vapor Intrusion		Outdoor Activities		Outdoor Activities		Outdoor Activities		Nonpotable Use		R. Worker GW Vol OA		R. Worker GW VI		Const. W GW Contact		Off-Site Res GW VI	
	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI
Tank Group 04	4E-06	2E-01	2E-04	3E+01	4E-07	7E-02	1E-06	9E-01	7E-06	7E-01	1E-06	3E-02	NC	NC	4E-08	3E-03	4E-09	9E-03	2E-06	1E-01

Notes:

Cumulative cancer risk and HI estimates in excess of 1E-4 and 1, respectively, are shaded and bold.

GW - Groundwater

VI - Vapor Intrusion

OA - Outdoor Air

NC - Risk and Hazard Index (HI) estimates were not calculated for detected chemicals with inadequate toxicity or physical/chemical parameters or where chemical concentrations were non-detect.

Table 6

Location-Specific Upper-Bound Cumulative Cancer Risk and Noncancer Hazard Index (HI) for Receptor Exposure to Soil
 Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Routine Worker Vapor Intrusion	
		Risk	HI
		Tank Group 04	PB-191-01
Tank Group 04	PB-191-02	6E-07	1E-02
Tank Group 04	PB-191-03	7E-07	2E-02
Tank Group 04	PB-191-04	7E-07	2E-02
Tank Group 04	PB-191-05	6E-07	2E-02
Tank Group 04	PB-191-06	3E-06	9E-02
Tank Group 04	PB-191-07	1E-06	3E-02
Tank Group 04	PB-191-08	4E-07	1E-02
Tank Group 04	PB-826-01	7E-07	2E-02
Tank Group 04	PB-826-02	6E-07	2E-02
Tank Group 04	PB-826-03	6E-07	2E-02
Tank Group 04	PB-826-04	6E-07	2E-02
Tank Group 04	PB-826-05	6E-07	2E-02
Tank Group 04	PB-826-06	6E-07	2E-02
Tank Group 04	PB-826-07	6E-07	2E-02
Tank Group 04	PB-826-08	7E-07	2E-02
Tank Group 04	PB-826-09	7E-07	2E-02
Tank Group 04	PB-826-10	6E-07	2E-02
Tank Group 04	PB-826-11	6E-07	2E-02
Tank Group 04	PB-826-12	6E-07	2E-02
Tank Group 04	PB-826-13	6E-07	2E-02
Tank Group 04	PB-826-14	2E-06	2E+00
Tank Group 04	PB-826-15	1E-05	2E+00
Tank Group 04	PB-826-16	2E-07	5E-03
Tank Group 04	PB-840-01	4E-07	1E-02
Tank Group 04	PB-840-02	6E-07	2E-02
Tank Group 04	PB-840-03	6E-07	2E-02
Tank Group 04	PB-840-04	6E-07	2E-02
Tank Group 04	PB-840-05	5E-07	1E-02
Tank Group 04	PB-840-06	6E-07	2E-02
Tank Group 04	PB-840-07	1E-06	3E-02
Tank Group 04	PB-840-08	7E-07	2E-02
Tank Group 04	PB-840-09	1E-04	3E+01
Tank Group 04	PB-840-10	6E-07	2E-02
Tank Group 04	PB-840-11	8E-07	3E-02
Tank Group 04	PB-840-12	6E-07	2E-02
Tank Group 04	PB-840-13	6E-07	2E-02
Tank Group 04	PB-840-14	6E-07	2E-02
Tank Group 04	PB-840-15	6E-07	2E-02
Tank Group 04	PB-840-16	6E-07	2E-02
Tank Group 04	PB-841-01	6E-07	2E-02
Tank Group 04	PB-841-02	6E-07	2E-02
Tank Group 04	PB-841-03	6E-07	2E-02
Tank Group 04	PB-841-04	6E-07	2E-02
Tank Group 04	PB-841-05	6E-07	2E-02
Tank Group 04	PB-841-06	7E-07	2E-02
Tank Group 04	PB-841-07	7E-07	2E-02
Tank Group 04	PB-841-08	6E-07	2E-02
Tank Group 04	PB-841-09	6E-07	2E-02
Tank Group 04	PB-841-10	6E-07	2E-02
Tank Group 04	PB-841-11	6E-07	2E-02
Tank Group 04	PB-841-12	6E-07	2E-02
Tank Group 04	PB-841-13	6E-07	2E-02
Tank Group 04	PB-841-14	6E-07	2E-02
Tank Group 04	PB-843-01	6E-07	2E-02
Tank Group 04	PB-843-02	7E-07	2E-02
Tank Group 04	PB-843-03	6E-07	2E-02
Tank Group 04	PB-843-04	7E-07	2E-02
Tank Group 04	PB-843-05	8E-07	2E-02
Tank Group 04	PB-843-06	7E-07	2E-02
Tank Group 04	PB-843-07	3E-07	8E-03
Tank Group 04	PB-843-08	6E-07	2E-02
Tank Group 04	PB-843-09	7E-07	2E-02
Tank Group 04	PB-843-10	2E-06	4E-02
Tank Group 04	PB-843-11	7E-07	2E-02
Tank Group 04	PB-843-12	6E-07	2E-02

Table 6

Location-Specific Upper-Bound Cumulative Cancer Risk and Noncancer Hazard Index (HI) for Receptor Exposure to Soil
 Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Routine Worker	
		Vapor Intrusion	
		Risk	HI
Tank Group 04	PB-843-13	6E-07	2E-02
Tank Group 04	PB-843-14	7E-07	2E-02
Tank Group 04	PB-843-15	6E-07	2E-02
Tank Group 04	PB-843-16	6E-07	2E-02
Tank Group 04	PB-843-17	7E-07	2E-02
Tank Group 04	PB-847-01	7E-07	2E-02
Tank Group 04	PB-847-02	7E-07	2E-02
Tank Group 04	PB-847-03	6E-07	2E-02
Tank Group 04	PB-847-04	6E-07	2E-02
Tank Group 04	PB-847-05	6E-07	2E-02
Tank Group 04	PB-847-06	7E-07	2E-02
Tank Group 04	PB-847-07	7E-07	2E-02
Tank Group 04	PB-847-08	7E-07	2E-02
Tank Group 04	PB-847-09	7E-07	2E-02
Tank Group 04	PB-847-10	7E-07	2E-02
Tank Group 04	PB-847-11	7E-07	2E-02
Tank Group 04	PB-847-12	6E-07	3E-02
Tank Group 04	PB-847-13	2E-06	5E-01
Tank Group 04	PB-847-14	2E-06	1E-01
Tank Group 04	PB-847-15	5E-05	3E+00
Tank Group 04	PB-847-16	7E-07	2E-02
Tank Group 04	PB-847-17	8E-07	3E-02
Tank Group 04	PB-848-01	7E-07	2E-02
Tank Group 04	PB-848-02	6E-07	2E-02
Tank Group 04	PB-848-03	6E-07	2E-02
Tank Group 04	PB-848-04	4E-05	2E+00
Tank Group 04	PB-848-05	5E-07	1E-02
Tank Group 04	PB-848-06	1E-05	4E+00
Tank Group 04	PB-848-07	4E-06	5E-01
Tank Group 04	PB-848-08	7E-07	2E-02
Tank Group 04	PB-848-09	7E-07	2E-02
Tank Group 04	PB-848-10	8E-07	2E-02
Tank Group 04	PB-848-11	2E-05	3E-01
Tank Group 04	PB-848-12	3E-07	8E-03
Tank Group 04	PB-848-13	1E-06	4E-02
Tank Group 04	PB-848-14	7E-07	2E-02
Tank Group 04	PB-848-15	2E-05	4E+00
Tank Group 04	PB-848-16	7E-07	2E-02
Tank Group 04	PB-848-17	2E-07	5E-03
Tank Group 04	PB-848-18	9E-07	4E-02
Tank Group 04	PB-881-01	2E-06	7E-02
Tank Group 04	PB-881-02	6E-07	2E-02
Tank Group 04	PB-881-03	8E-06	2E-01
Tank Group 04	PB-881-04	3E-07	9E-03
Tank Group 04	PB-881-05	6E-07	2E-02
Tank Group 04	PB-881-06	6E-07	2E-02
Tank Group 04	PB-881-07	2E-06	2E-01
Tank Group 04	PB-881-08	7E-07	2E-02
Tank Group 04	PB-881-09	7E-07	2E-02
Tank Group 04	PB-881-10	3E-05	2E+00
Tank Group 04	PB-881-11	6E-07	2E-02
Tank Group 04	PB-881-12	6E-07	2E-02
Tank Group 04	PB-881-13	6E-07	2E-02
Tank Group 04	PB-881-14	6E-07	2E-02
Tank Group 04	PB-881-15	7E-07	2E-02
Tank Group 04	PB-881-16	7E-07	2E-02
Tank Group 04	PB-881-17	6E-07	2E-02
Tank Group 04	PB-881-18	6E-07	2E-02
Tank Group 04	PB-882-01	3E-08	1E-03
Tank Group 04	PB-882-02	3E-08	1E-03
Tank Group 04	PB-882-03	7E-07	2E-02
Tank Group 04	PB-882-04	7E-07	2E-02
Tank Group 04	PB-882-05	6E-07	2E-02
Tank Group 04	PB-882-06	6E-07	2E-02
Tank Group 04	PB-882-07	6E-07	2E-02
Tank Group 04	PB-882-08	1E-05	3E-01

Table 6

Location-Specific Upper-Bound Cumulative Cancer Risk and Noncancer Hazard Index (HI) for Receptor Exposure to Soil
 Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Routine Worker	
		Vapor Intrusion	
		Risk	HI
Tank Group 04	PB-882-09	4E-07	1E-02
Tank Group 04	PB-882-10	2E-06	1E-01
Tank Group 04	PB-882-11	7E-07	2E-02
Tank Group 04	PB-882-12	7E-07	2E-02
Tank Group 04	PB-882-13	6E-07	2E-02
Tank Group 04	PB-882-14	9E-07	3E-02
Tank Group 04	PB-882-15	7E-08	2E-03
Tank Group 04	PB-882-16	3E-05	1E+01
Tank Group 04	PB-882-17	7E-08	2E-03
Tank Group 04	PB-882-18	3E-08	1E-03
Tank Group 04	PB-882-19	3E-08	1E-03
Tank Group 04	PB-882-20	4E-07	1E-02
Tank Group 04	PB-883-01	7E-07	2E-02
Tank Group 04	PB-883-02	7E-07	2E-02
Tank Group 04	PB-883-03	7E-07	2E-02
Tank Group 04	PB-883-04	6E-07	2E-02
Tank Group 04	PB-883-05	7E-07	2E-02
Tank Group 04	PB-883-06	6E-07	2E-02
Tank Group 04	PB-883-07	7E-07	2E-02
Tank Group 04	PB-883-08	7E-07	2E-02
Tank Group 04	PB-883-09	6E-07	2E-02
Tank Group 04	PB-883-10	6E-07	2E-02
Tank Group 04	PB-883-11	6E-07	2E-02
Tank Group 04	PB-883-12	7E-07	2E-02
Tank Group 04	PB-883-13	7E-07	2E-02
Tank Group 04	PB-883-14	7E-07	2E-02
Tank Group 04	PB-883-15	7E-07	2E-02
Tank Group 04	PB-883-16	3E-06	9E-02
Tank Group 04	PB-883-17	3E-06	8E-02
Tank Group 04	PB-883-18	3E-06	1E-01
Tank Group 04	PB-883-19	6E-07	2E-02
Tank Group 04	PB-883-20	7E-07	2E-02
Tank Group 04	PB-883-21	2E-05	6E-01
Tank Group 04	PB-883-22	6E-07	2E-02
Tank Group 04	PB-883-23	7E-07	2E-02
Tank Group 04	PB-883-24	7E-07	2E-02
Tank Group 04	PB-884-01	7E-07	2E-02
Tank Group 04	PB-884-02	7E-07	2E-02
Tank Group 04	PB-884-03	7E-07	2E-02
Tank Group 04	PB-884-04	5E-07	2E-02
Tank Group 04	PB-884-05	6E-07	2E-02
Tank Group 04	PB-884-06	6E-07	2E-02
Tank Group 04	PB-884-07	6E-07	2E-02
Tank Group 04	PB-884-08	8E-06	8E-01
Tank Group 04	PB-884-09	6E-05	6E+00
Tank Group 04	PB-884-10	6E-07	2E-02
Tank Group 04	PB-884-11	5E-07	1E-02
Tank Group 04	PB-884-12	7E-07	2E-02
Tank Group 04	PB-884-13	6E-07	2E-02
Tank Group 04	PB-884-14	6E-07	2E-02
Tank Group 04	PB-884-15	5E-05	6E+00
Tank Group 04	PB-884-16	6E-07	2E-02
Tank Group 04	PB-884-17	6E-07	2E-02
Tank Group 04	PB-884-18	1E-06	2E-02
Tank Group 04	PB-884-19	6E-07	3E-02
Tank Group 04	PB-884-20	6E-07	2E-02
Tank Group 04	PB-884-21	6E-07	2E-02
Tank Group 04	PB-884-22	6E-07	2E-02
Tank Group 04	PB-884-23	6E-07	2E-02
Tank Group 04	PB-884-24	1E-06	7E-02
Tank Group 04	PB-884-25	1E-04	6E+00
Tank Group 04	PB-884-26	7E-07	2E-02
Tank Group 04	PB-884-27	7E-07	2E-02
Tank Group 04	PB-884-28	7E-07	2E-02
Tank Group 04	PB-884-29	7E-07	2E-02
Tank Group 04	PB-885-01	6E-07	2E-02

Table 6

Location-Specific Upper-Bound Cumulative Cancer Risk and Noncancer Hazard Index (HI) for Receptor Exposure to Soil
 Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Routine Worker Vapor Intrusion	
		Risk	HI
		Tank Group 04	PB-885-02
Tank Group 04	PB-885-03	6E-07	2E-02
Tank Group 04	PB-885-04	6E-07	2E-02
Tank Group 04	PB-885-05	6E-07	2E-02
Tank Group 04	PB-885-06	6E-07	2E-02
Tank Group 04	PB-885-07	6E-07	2E-02
Tank Group 04	PB-885-08	1E-06	3E-02
Tank Group 04	PB-885-09	7E-07	2E-02
Tank Group 04	PB-885-10	6E-07	2E-02
Tank Group 04	PB-885-11	7E-07	2E-02
Tank Group 04	PB-885-12	6E-07	2E-02
Tank Group 04	PB-885-13	6E-07	2E-02
Tank Group 04	PB-885-14	6E-07	2E-02
Tank Group 04	PB-885-15	6E-07	2E-02
Tank Group 04	PB-885-16	7E-07	2E-02
Tank Group 04	PB-885-17	6E-07	2E-02
Tank Group 04	PB-885-18	6E-07	2E-02
Tank Group 04	PB-885-19	6E-07	2E-02
Tank Group 04	PB-885-20	6E-07	2E-02
Tank Group 04	PB-885-21	6E-07	2E-02
Tank Group 04	PB-885-22	7E-07	2E-02
Tank Group 04	PB-885-23	7E-06	2E-01
Tank Group 04	PB-885-24	7E-07	2E-02
Tank Group 04	PB-885-25	6E-07	2E-02
Tank Group 04	PB-885-26	6E-07	2E-02
Tank Group 04	PB-886-01	6E-07	2E-02
Tank Group 04	PB-886-02	7E-07	2E-02
Tank Group 04	PB-886-03	7E-07	2E-02
Tank Group 04	PB-886-04	6E-07	2E-02
Tank Group 04	PB-886-05	6E-07	2E-02
Tank Group 04	PB-886-06	6E-07	2E-02
Tank Group 04	PB-886-07	7E-07	2E-02
Tank Group 04	PB-886-08	8E-07	4E-02
Tank Group 04	PB-886-09	6E-07	2E-02
Tank Group 04	PB-886-10	3E-07	8E-03
Tank Group 04	PB-886-11	6E-07	2E-02
Tank Group 04	PB-886-12	7E-07	2E-02
Tank Group 04	PB-886-13	7E-07	2E-02
Tank Group 04	PB-886-14	6E-07	2E-02
Tank Group 04	PB-886-15	7E-07	2E-02
Tank Group 04	PB-886-16	6E-07	2E-02
Tank Group 04	PB-886-17	6E-07	2E-02
Tank Group 04	PB-886-18	1E-06	3E-02
Tank Group 04	PB-886-19	7E-07	2E-02
Tank Group 04	PB-886-20	6E-07	2E-02
Tank Group 04	PB-886-21	6E-07	2E-02
Tank Group 04	PB-886-22	6E-07	2E-02
Tank Group 04	PB-886-23	6E-07	2E-02
Tank Group 04	PB-886-24	7E-07	2E-02
Tank Group 04	PB-886-25	6E-07	2E-02
Tank Group 04	PB-886-26	2E-07	4E-02
Tank Group 04	PB-886-27	6E-07	3E-02

Notes:
 Cumulative cancer risk and HI estimates in excess of 1E-4 and 1, respectively, are shaded and bold.

Table 7

Upper-Bound Cumulative Cancer Risk and Noncancer Hazard Index (HI) for Receptor Exposure to Groundwater

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Routine Worker				Maintenance Worker		Construction Worker		Off-Resident				Resident	
	Vapor Intrusion		Outdoor Air Inhalation		Groundwater Contact		Groundwater Contact		Vapor Intrusion		Outdoor Air Inhalation		Nonpotable Use	
	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI
Tank Group 04	1E-06	2E-02	9E-09	1E-04	1E-06	5E-02	1E-07	2E-02	2E-05	3E-01	4E-08	5E-04	2E-05	1E-01

Notes:

Cumulative cancer risk and HI estimates in excess of 1E-4 and 1, respectively, are shaded and bold.

Table 8

Location-Specific Upper-Bound Cumulative Cancer Risk and Noncancer Hazard Index (HI) for Receptor Exposure to Groundwater
 Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

AOI	Location	Routine Worker				Maintenance Worker		Construction Worker		Off-Site Resident				Resident	
		Vapor Intrusion		Outdoor Air Inhalation		Groundwater Contact		Groundwater Contact		Vapor Intrusion		Outdoor Air Inhalation		Nonpotable Use	
		Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI	Risk	HI
Tank Group 04	S-219	2E-09	6E-05	2E-11	4E-07	3E-09	2E-04	3E-10	5E-05	4E-08	1E-03	7E-11	2E-06	9E-08	2E-04
Tank Group 04	TG04-MW-01	1E-06	2E-02	9E-09	1E-04	1E-06	5E-02	1E-07	2E-02	2E-05	3E-01	4E-08	5E-04	2E-05	1E-01
Tank Group 04	TG04-MW-03	2E-09	6E-05	2E-11	4E-07	3E-09	2E-04	3E-10	5E-05	4E-08	1E-03	7E-11	2E-06	8E-08	2E-04

Notes:

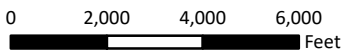
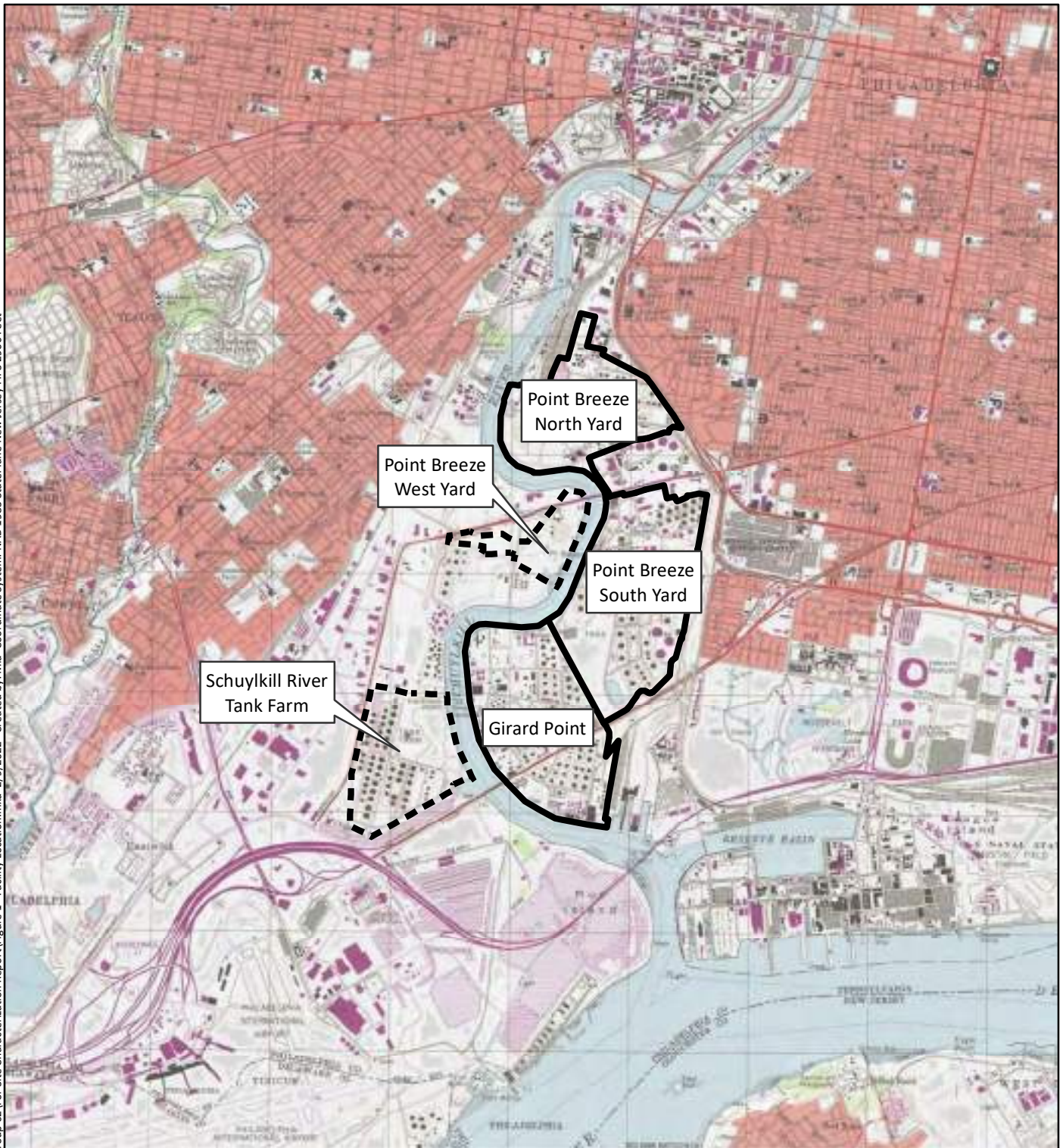
Cumulative cancer risk and HI estimates in excess of 1E-4 and 1, respectively, are shaded and bold.

Figures

- 1 Facility Location
- 2 Site Location
- 3 Site Layout
- 4 Soil Sample Results Compared to RBSLs
- 5 Groundwater Sample Results Compared to RBSLs
- 6 Risk Assessment Results (Soil)



File: N:\GIS\Prj\044.001_PESRM-PE\MXDS\AST\Work\Tank Group 02\For Site Characterization Report\Figure 1 - Facility Location.mxd 2/9/2022. Created by: Mia Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet



1 inch = 4,000 feet



Legend

- Subject to AST Closure Plan
- Not Subject to AST Closure Plan

Base Map: USGS Philadelphia 1994 7.5 Minute Quadrangle.

SAFETY FIRST



CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Facility Location

Figure 1

File: N:\GIS\PI\P044_001_PESRM-PES\WXDS\AST Work\Tank Group 04\For Site Characterization Report\Figure 2 - Site Location (RA).mxd 2/5/2023 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

Tank Group

04

Subject to AST Closure Plan

Not Subject to AST Closure Plan

N

0 500 1,000 1,500
Feet

1 inch = 1,000 feet

Notes: Aerial imagery source Maxar 10/19/2019

SAFETY FIRST

CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Site Location

Figure 2



File: N:\GIS\VP\0404_001_PESRM-PES\WXDS\AST Work\Tank Group 04\For Site Characterization Report\Figure 3 - Site Layout Map.mxd 8/11/2022 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet

Legend

Tank Group

- 04
- Previously Closed
- Subject to AST Closure Plan
- Associated Piping

Notes: Aerial imagery source Maxar 10/19/2019

0 105 210 315

Feet

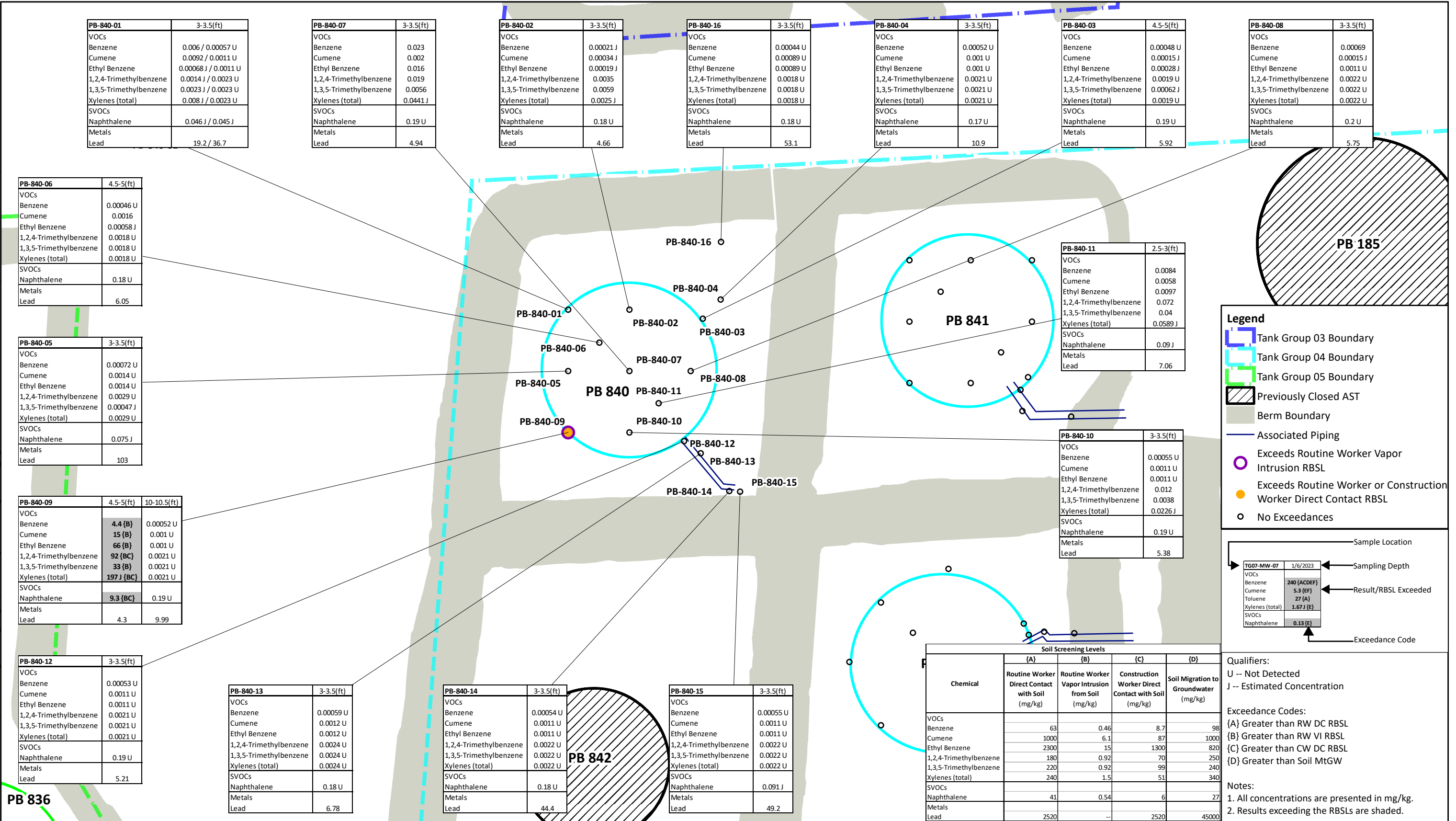
1 inch = 210 feet

SAFETY FIRST

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Aboveground Storage Tank Closure
PROJECT NUMBER:	P044.001.002

**Site Layout Map
Tank Group 04**

Figure 3



PB-840-01		3-3.5(ft)
VOCs		
Benzene	0.006 / 0.00057 U	
Cumene	0.0092 / 0.0011 U	
Ethyl Benzene	0.00068 J / 0.0011 U	
1,2,4-Trimethylbenzene	0.0014 J / 0.0023 U	
1,3,5-Trimethylbenzene	0.0023 J / 0.0023 U	
Xylenes (total)	0.008 J / 0.0023 U	
SVOCs		
Naphthalene	0.046 J / 0.045 J	
Metals		
Lead	19.2 / 36.7	

PB-840-07		3-3.5(ft)
VOCs		
Benzene	0.023	
Cumene	0.002	
Ethyl Benzene	0.016	
1,2,4-Trimethylbenzene	0.019	
1,3,5-Trimethylbenzene	0.0056	
Xylenes (total)	0.044 J	
SVOCs		
Naphthalene	0.19 U	
Metals		
Lead	4.94	

PB-840-02		3-3.5(ft)
VOCs		
Benzene	0.00021 J	
Cumene	0.00034 J	
Ethyl Benzene	0.00019 J	
1,2,4-Trimethylbenzene	0.0035	
1,3,5-Trimethylbenzene	0.0059	
Xylenes (total)	0.0025 J	
SVOCs		
Naphthalene	0.18 U	
Metals		
Lead	4.66	

PB-840-16		3-3.5(ft)
VOCs		
Benzene	0.00044 U	
Cumene	0.00089 U	
Ethyl Benzene	0.00089 U	
1,2,4-Trimethylbenzene	0.0018 U	
1,3,5-Trimethylbenzene	0.0018 U	
Xylenes (total)	0.0018 U	
SVOCs		
Naphthalene	0.18 U	
Metals		
Lead	53.1	

PB-840-04		3-3.5(ft)
VOCs		
Benzene	0.00052 U	
Cumene	0.001 U	
Ethyl Benzene	0.001 U	
1,2,4-Trimethylbenzene	0.0021 U	
1,3,5-Trimethylbenzene	0.0021 U	
Xylenes (total)	0.0021 U	
SVOCs		
Naphthalene	0.17 U	
Metals		
Lead	10.9	

PB-840-03		4.5-5(ft)
VOCs		
Benzene	0.00048 U	
Cumene	0.00015 J	
Ethyl Benzene	0.00028 J	
1,2,4-Trimethylbenzene	0.0019 U	
1,3,5-Trimethylbenzene	0.00062 J	
Xylenes (total)	0.0019 U	
SVOCs		
Naphthalene	0.19 U	
Metals		
Lead	5.92	

PB-840-08		3-3.5(ft)
VOCs		
Benzene	0.00069	
Cumene	0.00015 J	
Ethyl Benzene	0.0011 U	
1,2,4-Trimethylbenzene	0.0022 U	
1,3,5-Trimethylbenzene	0.0022 U	
Xylenes (total)	0.0022 U	
SVOCs		
Naphthalene	0.2 U	
Metals		
Lead	5.75	

PB-840-06		4.5-5(ft)
VOCs		
Benzene	0.00046 U	
Cumene	0.0016	
Ethyl Benzene	0.00058 J	
1,2,4-Trimethylbenzene	0.0018 U	
1,3,5-Trimethylbenzene	0.0018 U	
Xylenes (total)	0.0018 U	
SVOCs		
Naphthalene	0.18 U	
Metals		
Lead	6.05	

PB-840-05		3-3.5(ft)
VOCs		
Benzene	0.00072 U	
Cumene	0.0014 U	
Ethyl Benzene	0.0014 U	
1,2,4-Trimethylbenzene	0.0029 U	
1,3,5-Trimethylbenzene	0.00047 J	
Xylenes (total)	0.0029 U	
SVOCs		
Naphthalene	0.075 J	
Metals		
Lead	103	

PB-840-09		4.5-5(ft)	10-10.5(ft)
VOCs			
Benzene	4.4 {B}	0.00052 U	
Cumene	15 {B}	0.001 U	
Ethyl Benzene	66 {B}	0.001 U	
1,2,4-Trimethylbenzene	92 {BC}	0.0021 U	
1,3,5-Trimethylbenzene	33 {B}	0.0021 U	
Xylenes (total)	197 J {BC}	0.0021 U	
SVOCs			
Naphthalene	9.3 {BC}	0.19 U	
Metals			
Lead	4.3	9.99	

PB-840-12		3-3.5(ft)
VOCs		
Benzene	0.00053 U	
Cumene	0.0011 U	
Ethyl Benzene	0.0011 U	
1,2,4-Trimethylbenzene	0.0021 U	
1,3,5-Trimethylbenzene	0.0021 U	
Xylenes (total)	0.0021 U	
SVOCs		
Naphthalene	0.19 U	
Metals		
Lead	5.21	

PB-840-13		3-3.5(ft)
VOCs		
Benzene	0.00059 U	
Cumene	0.0012 U	
Ethyl Benzene	0.0012 U	
1,2,4-Trimethylbenzene	0.0024 U	
1,3,5-Trimethylbenzene	0.0024 U	
Xylenes (total)	0.0024 U	
SVOCs		
Naphthalene	0.18 U	
Metals		
Lead	6.78	

PB-840-14		3-3.5(ft)
VOCs		
Benzene	0.00054 U	
Cumene	0.0011 U	
Ethyl Benzene	0.0011 U	
1,2,4-Trimethylbenzene	0.0022 U	
1,3,5-Trimethylbenzene	0.0022 U	
Xylenes (total)	0.0022 U	
SVOCs		
Naphthalene	0.18 U	
Metals		
Lead	44.4	

PB-840-15		3-3.5(ft)
VOCs		
Benzene	0.00055 U	
Cumene	0.0011 U	
Ethyl Benzene	0.0011 U	
1,2,4-Trimethylbenzene	0.0022 U	
1,3,5-Trimethylbenzene	0.0022 U	
Xylenes (total)	0.0022 U	
SVOCs		
Naphthalene	0.091 J	
Metals		
Lead	49.2	

PB-840-11		2.5-3(ft)
VOCs		
Benzene	0.0084	
Cumene	0.0058	
Ethyl Benzene	0.0097	
1,2,4-Trimethylbenzene	0.072	
1,3,5-Trimethylbenzene	0.04	
Xylenes (total)	0.0589 J	
SVOCs		
Naphthalene	0.09 J	
Metals		
Lead	7.06	

PB-840-10		3-3.5(ft)
VOCs		
Benzene	0.00055 U	
Cumene	0.0011 U	
Ethyl Benzene	0.0011 U	
1,2,4-Trimethylbenzene	0.012	
1,3,5-Trimethylbenzene	0.0038	
Xylenes (total)	0.0226 J	
SVOCs		
Naphthalene	0.19 U	
Metals		
Lead	5.38	

Legend

- Tank Group 03 Boundary
- Tank Group 04 Boundary
- Tank Group 05 Boundary
- Previously Closed AST
- Berm Boundary
- Associated Piping
- Exceeds Routine Worker Vapor Intrusion RBSL
- Exceeds Routine Worker or Construction Worker Direct Contact RBSL
- No Exceedances

Sample Location

Sampling Depth

Result/RBSL Exceeded

Exceedance Code

TG07-MW-07	1/6/2023
VOCs	
Benzene	240 {ACDEF}
Cumene	5.3 {EF}
Toluene	27 {A}
Xylenes (total)	1.67 J {E}
SVOCs	
Naphthalene	0.13 {E}

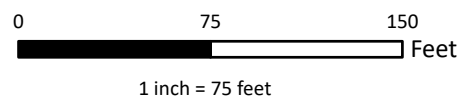
Chemical	Soil Screening Levels			
	{A}	{B}	{C}	{D}
VOCs				
Benzene	63	0.46	8.7	98
Cumene	1000	6.1	87	1000
Ethyl Benzene	2300	15	1300	820
1,2,4-Trimethylbenzene	180	0.92	70	250
1,3,5-Trimethylbenzene	220	0.92	99	240
Xylenes (total)	240	1.5	51	340
SVOCs				
Naphthalene	41	0.54	6	27
Metals				
Lead	2520	--	2520	45000

Qualifiers:
 U -- Not Detected
 J -- Estimated Concentration

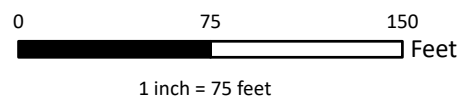
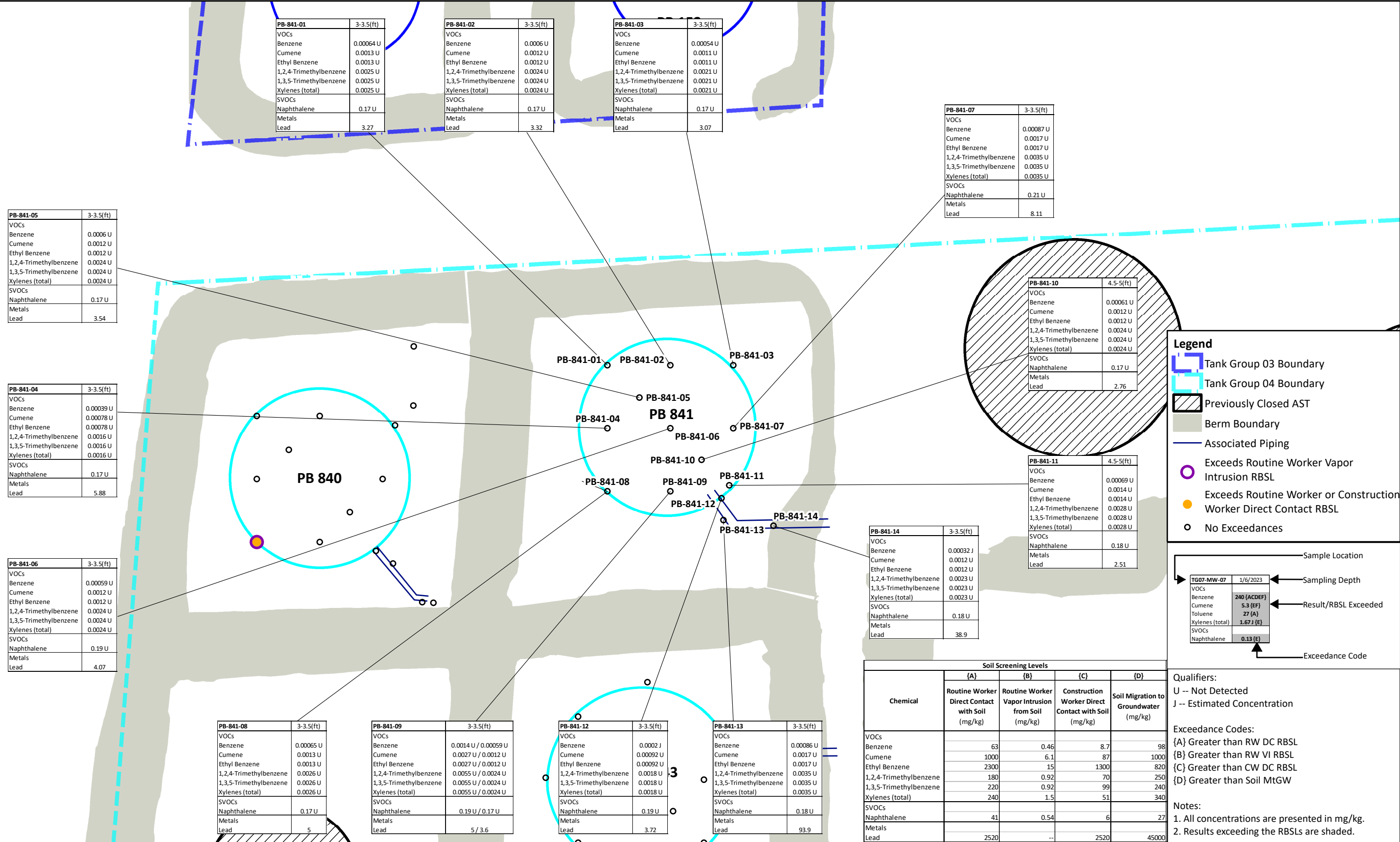
Exceedance Codes:
 {A} Greater than RW DC RBSL
 {B} Greater than RW VI RBSL
 {C} Greater than CW DC RBSL
 {D} Greater than Soil MtGw

Notes:
 1. All concentrations are presented in mg/kg.
 2. Results exceeding the RBSLs are shaded.

PB 836



 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Soil Sample Results Tank Group 04 (AST PB 840) Figure 4A
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	



<p>SAFETY FIRST</p>	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	<p>Soil Sample Results Tank Group 04 (AST PB 841)</p> <p>Figure 4B</p>
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	

Legend

- Tank Group 03 Boundary
- Tank Group 04 Boundary
- Previously Closed AST
- Berm Boundary
- Associated Piping
- Exceeds Routine Worker Vapor Intrusion RBSL
- Exceeds Routine Worker or Construction Worker Direct Contact RBSL
- No Exceedances

Sample Location

Sampling Depth

Result/RBSL Exceeded

Exceedance Code

Qualifiers:
 U -- Not Detected
 J -- Estimated Concentration

Exceedance Codes:
 {A} Greater than RW DC RBSL
 {B} Greater than RW VI RBSL
 {C} Greater than CW DC RBSL
 {D} Greater than Soil MtGW

Notes:
 1. All concentrations are presented in mg/kg.
 2. Results exceeding the RBSLs are shaded.

TG07-MW-07	1/6/2023
VOCs	
Benzene	240 {ACDEF}
Cumene	5.3 {EF}
Toluene	27 {A}
Xylenes (total)	1.67 {E}
SVOCs	
Naphthalene	0.13 {E}

PB-841-05	3-3.5(ft)
VOCs	
Benzene	0.0006 U
Cumene	0.0012 U
Ethyl Benzene	0.0012 U
1,2,4-Trimethylbenzene	0.0024 U
1,3,5-Trimethylbenzene	0.0024 U
Xylenes (total)	0.0024 U
SVOCs	
Naphthalene	0.17 U
Metals	
Lead	3.54

PB-841-04	3-3.5(ft)
VOCs	
Benzene	0.00039 U
Cumene	0.00078 U
Ethyl Benzene	0.00078 U
1,2,4-Trimethylbenzene	0.0016 U
1,3,5-Trimethylbenzene	0.0016 U
Xylenes (total)	0.0016 U
SVOCs	
Naphthalene	0.17 U
Metals	
Lead	5.88

PB-841-06	3-3.5(ft)
VOCs	
Benzene	0.00059 U
Cumene	0.0012 U
Ethyl Benzene	0.0012 U
1,2,4-Trimethylbenzene	0.0024 U
1,3,5-Trimethylbenzene	0.0024 U
Xylenes (total)	0.0024 U
SVOCs	
Naphthalene	0.19 U
Metals	
Lead	4.07

PB-841-08	3-3.5(ft)
VOCs	
Benzene	0.00065 U
Cumene	0.0013 U
Ethyl Benzene	0.0013 U
1,2,4-Trimethylbenzene	0.0026 U
1,3,5-Trimethylbenzene	0.0026 U
Xylenes (total)	0.0026 U
SVOCs	
Naphthalene	0.17 U
Metals	
Lead	5

PB-841-09	3-3.5(ft)
VOCs	
Benzene	0.0014 U / 0.00059 U
Cumene	0.0027 U / 0.0012 U
Ethyl Benzene	0.0027 U / 0.0012 U
1,2,4-Trimethylbenzene	0.0055 U / 0.0024 U
1,3,5-Trimethylbenzene	0.0055 U / 0.0024 U
Xylenes (total)	0.0055 U / 0.0024 U
SVOCs	
Naphthalene	0.19 U / 0.17 U
Metals	
Lead	5 / 3.6

PB-841-12	3-3.5(ft)
VOCs	
Benzene	0.0002 J
Cumene	0.00092 U
Ethyl Benzene	0.00092 U
1,2,4-Trimethylbenzene	0.0018 U
1,3,5-Trimethylbenzene	0.0018 U
Xylenes (total)	0.0018 U
SVOCs	
Naphthalene	0.19 U
Metals	
Lead	3.72

PB-841-13	3-3.5(ft)
VOCs	
Benzene	0.00086 U
Cumene	0.0017 U
Ethyl Benzene	0.0017 U
1,2,4-Trimethylbenzene	0.0035 U
1,3,5-Trimethylbenzene	0.0035 U
Xylenes (total)	0.0035 U
SVOCs	
Naphthalene	0.18 U
Metals	
Lead	93.9

PB-841-01	3-3.5(ft)
VOCs	
Benzene	0.00064 U
Cumene	0.0013 U
Ethyl Benzene	0.0013 U
1,2,4-Trimethylbenzene	0.0025 U
1,3,5-Trimethylbenzene	0.0025 U
Xylenes (total)	0.0025 U
SVOCs	
Naphthalene	0.17 U
Metals	
Lead	3.27

PB-841-02	3-3.5(ft)
VOCs	
Benzene	0.0006 U
Cumene	0.0012 U
Ethyl Benzene	0.0012 U
1,2,4-Trimethylbenzene	0.0024 U
1,3,5-Trimethylbenzene	0.0024 U
Xylenes (total)	0.0024 U
SVOCs	
Naphthalene	0.17 U
Metals	
Lead	3.32

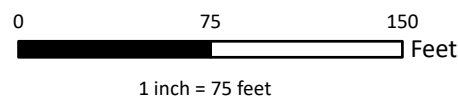
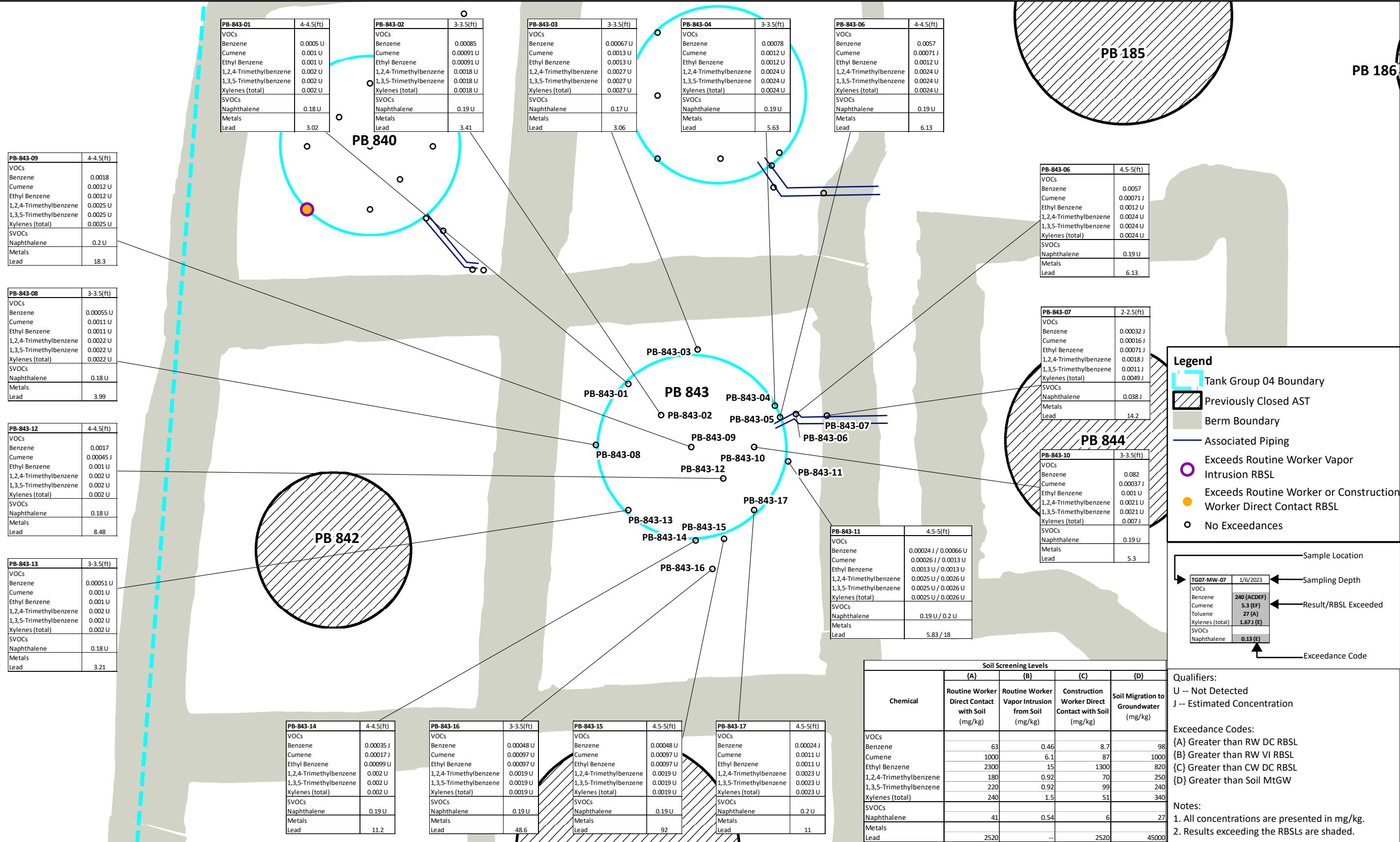
PB-841-03	3-3.5(ft)
VOCs	
Benzene	0.00054 U
Cumene	0.0011 U
Ethyl Benzene	0.0011 U
1,2,4-Trimethylbenzene	0.0021 U
1,3,5-Trimethylbenzene	0.0021 U
Xylenes (total)	0.0021 U
SVOCs	
Naphthalene	0.17 U
Metals	
Lead	3.07

PB-841-07	3-3.5(ft)
VOCs	
Benzene	0.00087 U
Cumene	0.0017 U
Ethyl Benzene	0.0017 U
1,2,4-Trimethylbenzene	0.0035 U
1,3,5-Trimethylbenzene	0.0035 U
Xylenes (total)	0.0035 U
SVOCs	
Naphthalene	0.21 U
Metals	
Lead	8.11

PB-841-10	4.5-5(ft)
VOCs	
Benzene	0.00061 U
Cumene	0.0012 U
Ethyl Benzene	0.0012 U
1,2,4-Trimethylbenzene	0.0024 U
1,3,5-Trimethylbenzene	0.0024 U
Xylenes (total)	0.0024 U
SVOCs	
Naphthalene	0.17 U
Metals	
Lead	2.76

PB-841-11	4.5-5(ft)
VOCs	
Benzene	0.00069 U
Cumene	0.0014 U
Ethyl Benzene	0.0014 U
1,2,4-Trimethylbenzene	0.0028 U
1,3,5-Trimethylbenzene	0.0028 U
Xylenes (total)	0.0028 U
SVOCs	
Naphthalene	0.18 U
Metals	
Lead	2.51

PB-841-14	3-3.5(ft)
VOCs	
Benzene	0.00032 J
Cumene	0.0012 U
Ethyl Benzene	0.0012 U
1,2,4-Trimethylbenzene	0.0023 U
1,3,5-Trimethylbenzene	0.0023 U
Xylenes (total)	0.0023 U
SVOCs	
Naphthalene	0.18 U
Metals	
Lead	38.9



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CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

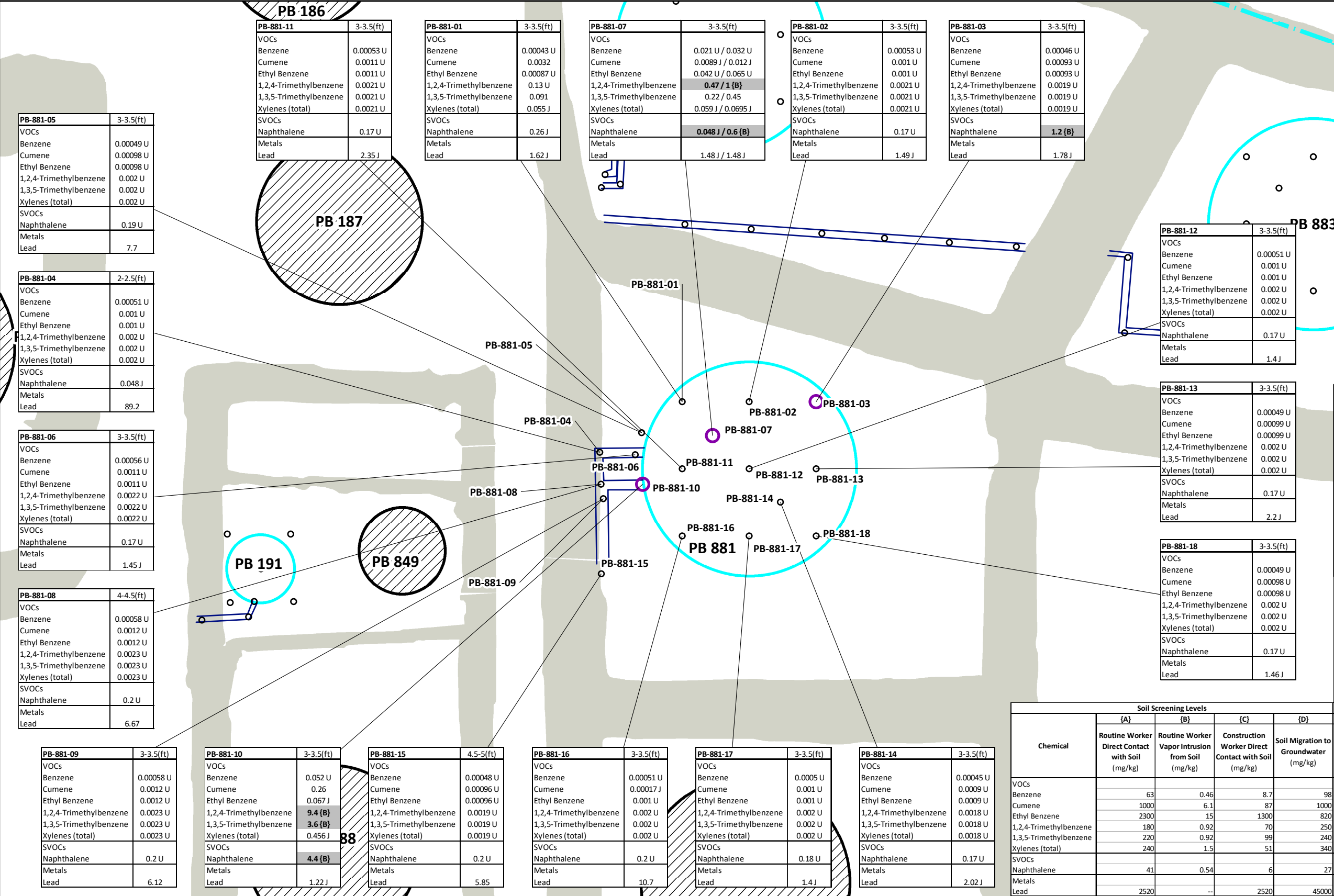
PROJECT NUMBER: P044.001.002

Soil Sample Results

Tank Group 04

(AST PB 843)

Figure 4C



PB-881-05		3-3.5(ft)
VOCs		
Benzene	0.00049 U	
Cumene	0.00098 U	
Ethyl Benzene	0.00098 U	
1,2,4-Trimethylbenzene	0.002 U	
1,3,5-Trimethylbenzene	0.002 U	
Xylenes (total)	0.002 U	
SVOCs		
Naphthalene	0.19 U	
Metals		
Lead	7.7	

PB-881-04		2-2.5(ft)
VOCs		
Benzene	0.00051 U	
Cumene	0.001 U	
Ethyl Benzene	0.001 U	
1,2,4-Trimethylbenzene	0.002 U	
1,3,5-Trimethylbenzene	0.002 U	
Xylenes (total)	0.002 U	
SVOCs		
Naphthalene	0.048 J	
Metals		
Lead	89.2	

PB-881-06		3-3.5(ft)
VOCs		
Benzene	0.00056 U	
Cumene	0.0011 U	
Ethyl Benzene	0.0011 U	
1,2,4-Trimethylbenzene	0.0022 U	
1,3,5-Trimethylbenzene	0.0022 U	
Xylenes (total)	0.0022 U	
SVOCs		
Naphthalene	0.17 U	
Metals		
Lead	1.45 J	

PB-881-08		4-4.5(ft)
VOCs		
Benzene	0.00058 U	
Cumene	0.0012 U	
Ethyl Benzene	0.0012 U	
1,2,4-Trimethylbenzene	0.0023 U	
1,3,5-Trimethylbenzene	0.0023 U	
Xylenes (total)	0.0023 U	
SVOCs		
Naphthalene	0.2 U	
Metals		
Lead	6.67	

PB-881-09		3-3.5(ft)
VOCs		
Benzene	0.00058 U	
Cumene	0.0012 U	
Ethyl Benzene	0.0012 U	
1,2,4-Trimethylbenzene	0.0023 U	
1,3,5-Trimethylbenzene	0.0023 U	
Xylenes (total)	0.0023 U	
SVOCs		
Naphthalene	0.2 U	
Metals		
Lead	6.12	

PB-881-10		3-3.5(ft)
VOCs		
Benzene	0.052 U	
Cumene	0.26	
Ethyl Benzene	0.067 J	
1,2,4-Trimethylbenzene	9.4 {B}	
1,3,5-Trimethylbenzene	3.6 {B}	
Xylenes (total)	0.456 J	
SVOCs		
Naphthalene	4.4 {B}	
Metals		
Lead	1.22 J	

PB-881-15		4.5-5(ft)
VOCs		
Benzene	0.00048 U	
Cumene	0.00096 U	
Ethyl Benzene	0.00096 U	
1,2,4-Trimethylbenzene	0.0019 U	
1,3,5-Trimethylbenzene	0.0019 U	
Xylenes (total)	0.0019 U	
SVOCs		
Naphthalene	0.2 U	
Metals		
Lead	5.85	

PB-881-16		3-3.5(ft)
VOCs		
Benzene	0.00051 U	
Cumene	0.00017 J	
Ethyl Benzene	0.001 U	
1,2,4-Trimethylbenzene	0.002 U	
1,3,5-Trimethylbenzene	0.002 U	
Xylenes (total)	0.002 U	
SVOCs		
Naphthalene	0.2 U	
Metals		
Lead	10.7	

PB-881-17		3-3.5(ft)
VOCs		
Benzene	0.0005 U	
Cumene	0.001 U	
Ethyl Benzene	0.001 U	
1,2,4-Trimethylbenzene	0.002 U	
1,3,5-Trimethylbenzene	0.002 U	
Xylenes (total)	0.002 U	
SVOCs		
Naphthalene	0.18 U	
Metals		
Lead	1.4 J	

PB-881-14		3-3.5(ft)
VOCs		
Benzene	0.00045 U	
Cumene	0.0009 U	
Ethyl Benzene	0.0009 U	
1,2,4-Trimethylbenzene	0.0018 U	
1,3,5-Trimethylbenzene	0.0018 U	
Xylenes (total)	0.0018 U	
SVOCs		
Naphthalene	0.17 U	
Metals		
Lead	2.02 J	

PB-881-11		3-3.5(ft)
VOCs		
Benzene	0.00053 U	
Cumene	0.0011 U	
Ethyl Benzene	0.0011 U	
1,2,4-Trimethylbenzene	0.0021 U	
1,3,5-Trimethylbenzene	0.0021 U	
Xylenes (total)	0.0021 U	
SVOCs		
Naphthalene	0.17 U	
Metals		
Lead	2.35 J	

PB-881-01		3-3.5(ft)
VOCs		
Benzene	0.00043 U	
Cumene	0.0032	
Ethyl Benzene	0.00087 U	
1,2,4-Trimethylbenzene	0.13 U	
1,3,5-Trimethylbenzene	0.091	
Xylenes (total)	0.055 J	
SVOCs		
Naphthalene	0.26 J	
Metals		
Lead	1.62 J	

PB-881-07		3-3.5(ft)
VOCs		
Benzene	0.021 U / 0.032 U	
Cumene	0.0089 J / 0.012 J	
Ethyl Benzene	0.042 U / 0.065 U	
1,2,4-Trimethylbenzene	0.47 / 1 {B}	
1,3,5-Trimethylbenzene	0.22 / 0.45	
Xylenes (total)	0.059 J / 0.0695 J	
SVOCs		
Naphthalene	0.048 J / 0.6 {B}	
Metals		
Lead	1.48 J / 1.48 J	

PB-881-02		3-3.5(ft)
VOCs		
Benzene	0.00053 U	
Cumene	0.001 U	
Ethyl Benzene	0.001 U	
1,2,4-Trimethylbenzene	0.0021 U	
1,3,5-Trimethylbenzene	0.0021 U	
Xylenes (total)	0.0021 U	
SVOCs		
Naphthalene	0.17 U	
Metals		
Lead	1.49 J	

PB-881-03		3-3.5(ft)
VOCs		
Benzene	0.00046 U	
Cumene	0.00093 U	
Ethyl Benzene	0.00093 U	
1,2,4-Trimethylbenzene	0.0019 U	
1,3,5-Trimethylbenzene	0.0019 U	
Xylenes (total)	0.0019 U	
SVOCs		
Naphthalene	1.2 {B}	
Metals		
Lead	1.78 J	

PB-881-12		3-3.5(ft)
VOCs		
Benzene	0.00051 U	
Cumene	0.001 U	
Ethyl Benzene	0.001 U	
1,2,4-Trimethylbenzene	0.002 U	
1,3,5-Trimethylbenzene	0.002 U	
Xylenes (total)	0.002 U	
SVOCs		
Naphthalene	0.17 U	
Metals		
Lead	1.4 J	

PB-881-13		3-3.5(ft)
VOCs		
Benzene	0.00049 U	
Cumene	0.00099 U	
Ethyl Benzene	0.00099 U	
1,2,4-Trimethylbenzene	0.002 U	
1,3,5-Trimethylbenzene	0.002 U	
Xylenes (total)	0.002 U	
SVOCs		
Naphthalene	0.17 U	
Metals		
Lead	2.2 J	

PB-881-18		3-3.5(ft)
VOCs		
Benzene	0.00049 U	
Cumene	0.00098 U	
Ethyl Benzene	0.00098 U	
1,2,4-Trimethylbenzene	0.002 U	
1,3,5-Trimethylbenzene	0.002 U	
Xylenes (total)	0.002 U	
SVOCs		
Naphthalene	0.17 U	
Metals		
Lead	1.46 J	

Legend

- Tank Group 03 Boundary
- Tank Group 04 Boundary
- Previously Closed AST
- Berm Boundary
- Associated Piping
- Exceeds Routine Worker Vapor
- Intrusion RBSL
- No Exceedances

Sample Location

Sampling Depth

Result/RBSL Exceeded

Exceedance Code

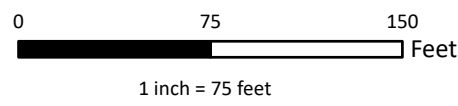
Sample ID	Date	VOCs	SVOCs
TG07-MW-07	1/6/2023	240 {ACDEF}	0.13 {E}
		5.3 {EF}	
		27 {A}	
		1.67 {E}	

Chemical	Soil Screening Levels			
	{A}	{B}	{C}	{D}
	Routine Worker Direct Contact with Soil (mg/kg)	Routine Worker Vapor Intrusion from Soil (mg/kg)	Construction Worker Direct Contact with Soil (mg/kg)	Soil Migration to Groundwater (mg/kg)
VOCs				
Benzene	63	0.46	8.7	98
Cumene	1000	6.1	87	1000
Ethyl Benzene	2300	15	1300	820
1,2,4-Trimethylbenzene	180	0.92	70	250
1,3,5-Trimethylbenzene	220	0.92	99	240
Xylenes (total)	240	1.5	51	340
SVOCs				
Naphthalene	41	0.54	6	27
Metals				
Lead	2520	--	2520	45000

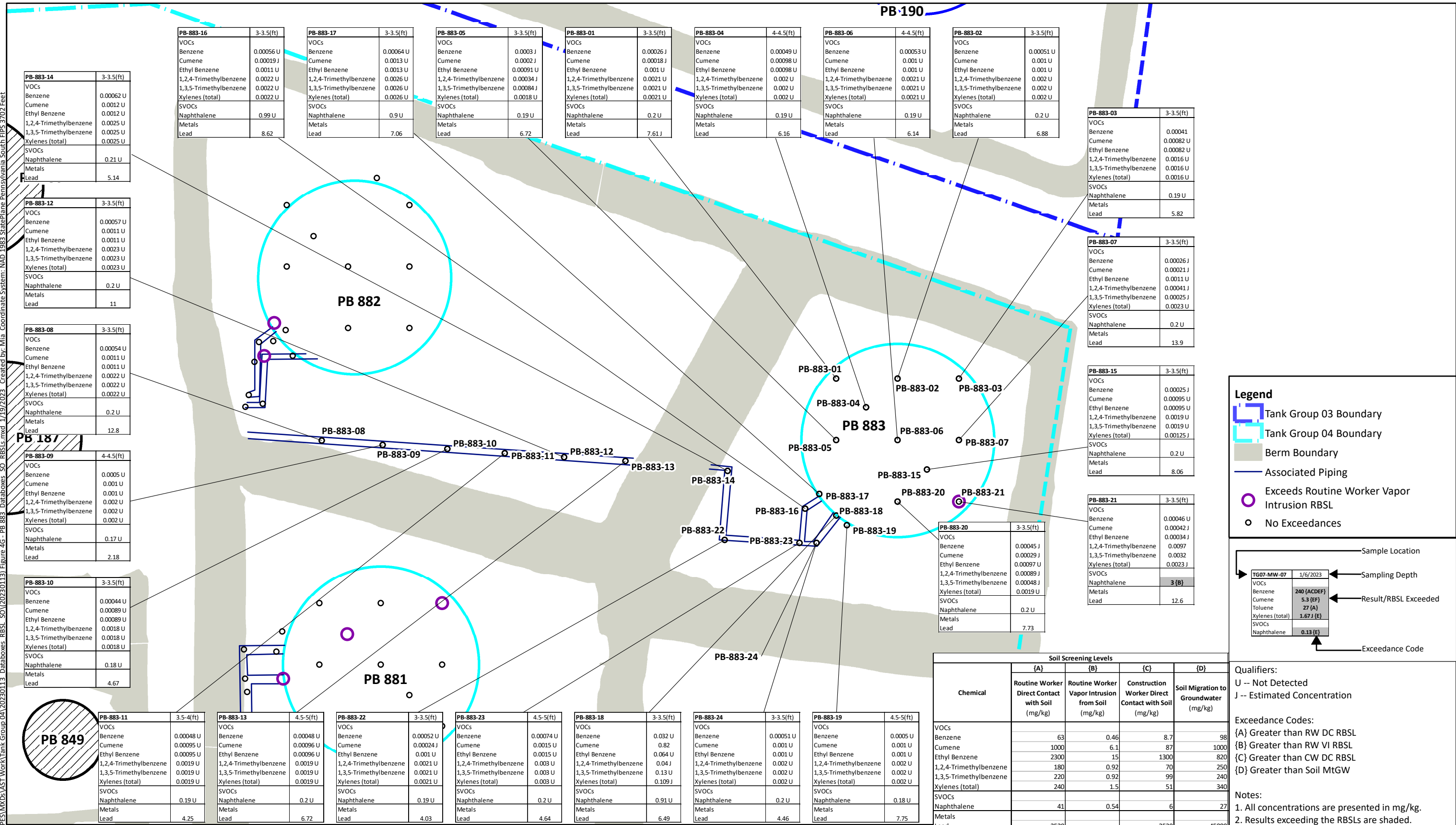
Qualifiers:
 U -- Not Detected
 J -- Estimated Concentration

Exceedance Codes:
 {A} Greater than RW DC RBSL
 {B} Greater than RW VI RBSL
 {C} Greater than CW DC RBSL
 {D} Greater than Soil MtGw

Notes:
 1. All concentrations are presented in mg/kg.
 2. Results exceeding the RBSLs are shaded.



 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Soil Sample Results Tank Group 04 (AST PB 881) Figure 4F
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	



Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-16	3-3.5(ft)	VOCs		
		Benzene	0.00056	U
		Cumene	0.00019	J
		Ethyl Benzene	0.0011	U
		1,2,4-Trimethylbenzene	0.0022	U
		1,3,5-Trimethylbenzene	0.0022	U
		Xylenes (total)	0.0022	U
		SVOCs		
		Naphthalene	0.99	U
		Metals		
Lead	8.62			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-12	3-3.5(ft)	VOCs		
		Benzene	0.00057	U
		Cumene	0.0011	U
		Ethyl Benzene	0.0011	U
		1,2,4-Trimethylbenzene	0.0023	U
		1,3,5-Trimethylbenzene	0.0023	U
		Xylenes (total)	0.0023	U
		SVOCs		
		Naphthalene	0.2	U
		Metals		
Lead	11			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-08	3-3.5(ft)	VOCs		
		Benzene	0.00054	U
		Cumene	0.0011	U
		Ethyl Benzene	0.0011	U
		1,2,4-Trimethylbenzene	0.0022	U
		1,3,5-Trimethylbenzene	0.0022	U
		Xylenes (total)	0.0022	U
		SVOCs		
		Naphthalene	0.2	U
		Metals		
Lead	12.8			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-09	4-4.5(ft)	VOCs		
		Benzene	0.0005	U
		Cumene	0.001	U
		Ethyl Benzene	0.001	U
		1,2,4-Trimethylbenzene	0.002	U
		1,3,5-Trimethylbenzene	0.002	U
		Xylenes (total)	0.002	U
		SVOCs		
		Naphthalene	0.17	U
		Metals		
Lead	2.18			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-10	3-3.5(ft)	VOCs		
		Benzene	0.00044	U
		Cumene	0.00089	U
		Ethyl Benzene	0.00089	U
		1,2,4-Trimethylbenzene	0.0018	U
		1,3,5-Trimethylbenzene	0.0018	U
		Xylenes (total)	0.0018	U
		SVOCs		
		Naphthalene	0.18	U
		Metals		
Lead	4.67			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-11	3.5-4(ft)	VOCs		
		Benzene	0.00048	U
		Cumene	0.00095	U
		Ethyl Benzene	0.00095	U
		1,2,4-Trimethylbenzene	0.0019	U
		1,3,5-Trimethylbenzene	0.0019	U
		Xylenes (total)	0.0019	U
		SVOCs		
		Naphthalene	0.19	U
		Metals		
Lead	4.25			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-13	4.5-5(ft)	VOCs		
		Benzene	0.00048	U
		Cumene	0.00096	U
		Ethyl Benzene	0.00096	U
		1,2,4-Trimethylbenzene	0.0019	U
		1,3,5-Trimethylbenzene	0.0019	U
		Xylenes (total)	0.0019	U
		SVOCs		
		Naphthalene	0.2	U
		Metals		
Lead	6.72			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-22	3-3.5(ft)	VOCs		
		Benzene	0.00052	U
		Cumene	0.00024	J
		Ethyl Benzene	0.001	U
		1,2,4-Trimethylbenzene	0.0021	U
		1,3,5-Trimethylbenzene	0.0021	U
		Xylenes (total)	0.0021	U
		SVOCs		
		Naphthalene	0.19	U
		Metals		
Lead	4.03			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-23	4.5-5(ft)	VOCs		
		Benzene	0.00074	U
		Cumene	0.0015	U
		Ethyl Benzene	0.0015	U
		1,2,4-Trimethylbenzene	0.003	U
		1,3,5-Trimethylbenzene	0.003	U
		Xylenes (total)	0.003	U
		SVOCs		
		Naphthalene	0.2	U
		Metals		
Lead	4.64			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-18	3-3.5(ft)	VOCs		
		Benzene	0.032	U
		Cumene	0.82	U
		Ethyl Benzene	0.064	U
		1,2,4-Trimethylbenzene	0.04	J
		1,3,5-Trimethylbenzene	0.13	U
		Xylenes (total)	0.109	J
		SVOCs		
		Naphthalene	0.91	U
		Metals		
Lead	6.49			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-24	3-3.5(ft)	VOCs		
		Benzene	0.00051	U
		Cumene	0.001	U
		Ethyl Benzene	0.001	U
		1,2,4-Trimethylbenzene	0.002	U
		1,3,5-Trimethylbenzene	0.002	U
		Xylenes (total)	0.002	U
		SVOCs		
		Naphthalene	0.2	U
		Metals		
Lead	4.46			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-17	3-3.5(ft)	VOCs		
		Benzene	0.00064	U
		Cumene	0.0013	U
		Ethyl Benzene	0.0013	U
		1,2,4-Trimethylbenzene	0.0026	U
		1,3,5-Trimethylbenzene	0.0026	U
		Xylenes (total)	0.0026	U
		SVOCs		
		Naphthalene	0.9	U
		Metals		
Lead	7.06			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-05	3-3.5(ft)	VOCs		
		Benzene	0.0003	J
		Cumene	0.0002	J
		Ethyl Benzene	0.00091	U
		1,2,4-Trimethylbenzene	0.00034	J
		1,3,5-Trimethylbenzene	0.00084	J
		Xylenes (total)	0.0018	U
		SVOCs		
		Naphthalene	0.19	U
		Metals		
Lead	6.72			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-01	3-3.5(ft)	VOCs		
		Benzene	0.00026	J
		Cumene	0.00018	J
		Ethyl Benzene	0.001	U
		1,2,4-Trimethylbenzene	0.0021	U
		1,3,5-Trimethylbenzene	0.0021	U
		Xylenes (total)	0.0021	U
		SVOCs		
		Naphthalene	0.2	U
		Metals		
Lead	7.61			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-04	4-4.5(ft)	VOCs		
		Benzene	0.00049	U
		Cumene	0.00098	U
		Ethyl Benzene	0.00098	U
		1,2,4-Trimethylbenzene	0.002	U
		1,3,5-Trimethylbenzene	0.002	U
		Xylenes (total)	0.002	U
		SVOCs		
		Naphthalene	0.19	U
		Metals		
Lead	6.16			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-06	4-4.5(ft)	VOCs		
		Benzene	0.00053	U
		Cumene	0.001	U
		Ethyl Benzene	0.001	U
		1,2,4-Trimethylbenzene	0.0021	U
		1,3,5-Trimethylbenzene	0.0021	U
		Xylenes (total)	0.0021	U
		SVOCs		
		Naphthalene	0.19	U
		Metals		
Lead	6.14			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-02	3-3.5(ft)	VOCs		
		Benzene	0.00051	U
		Cumene	0.001	U
		Ethyl Benzene	0.001	U
		1,2,4-Trimethylbenzene	0.002	U
		1,3,5-Trimethylbenzene	0.002	U
		Xylenes (total)	0.002	U
		SVOCs		
		Naphthalene	0.2	U
		Metals		
Lead	6.88			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-14	3-3.5(ft)	VOCs		
		Benzene	0.00062	U
		Cumene	0.0012	U
		Ethyl Benzene	0.0012	U
		1,2,4-Trimethylbenzene	0.0025	U
		1,3,5-Trimethylbenzene	0.0025	U
		Xylenes (total)	0.0025	U
		SVOCs		
		Naphthalene	0.21	U
		Metals		
Lead	5.14			

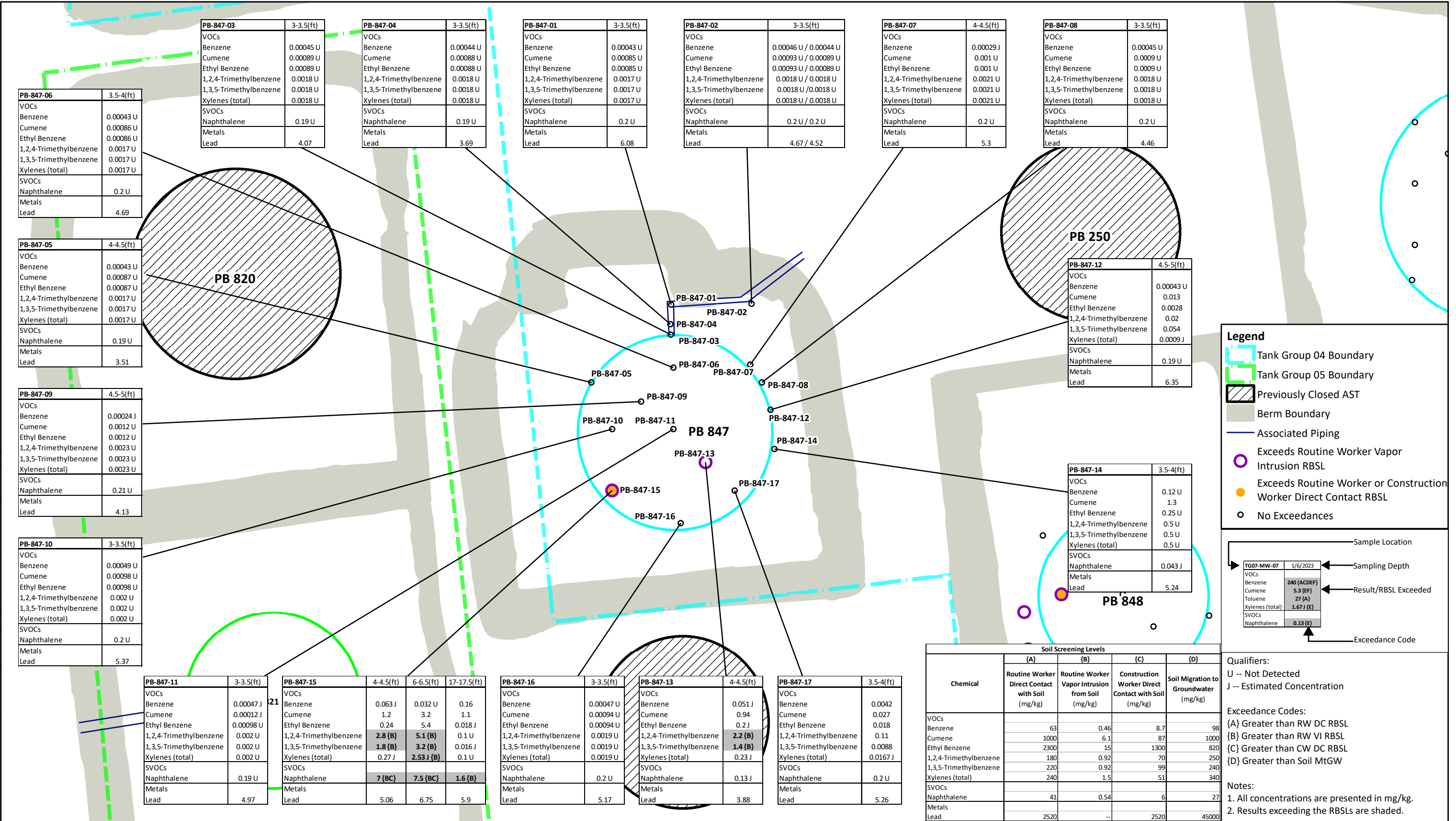
Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-12	3-3.5(ft)	VOCs		
		Benzene	0.00057	U
		Cumene	0.0011	U
		Ethyl Benzene	0.0011	U
		1,2,4-Trimethylbenzene	0.0023	U
		1,3,5-Trimethylbenzene	0.0023	U
		Xylenes (total)	0.0023	U
		SVOCs		
		Naphthalene	0.2	U
		Metals		
Lead	11			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-08	3-3.5(ft)	VOCs		
		Benzene	0.00054	U
		Cumene	0.0011	U
		Ethyl Benzene	0.0011	U
		1,2,4-Trimethylbenzene	0.0022	U
		1,3,5-Trimethylbenzene	0.0022	U
		Xylenes (total)	0.0022	U
		SVOCs		
		Naphthalene	0.2	U
		Metals		
Lead	12.8			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-09	4-4.5(ft)	VOCs		
		Benzene	0.0005	U
		Cumene	0.001	U
		Ethyl Benzene	0.001	U
		1,2,4-Trimethylbenzene	0.002	U
		1,3,5-Trimethylbenzene	0.002	U
		Xylenes (total)	0.002	U
		SVOCs		
		Naphthalene	0.17	U
		Metals		
Lead	2.18			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-10	3-3.5(ft)	VOCs		
		Benzene	0.00044	U
		Cumene	0.00089	U
		Ethyl Benzene	0.00089	U
		1,2,4-Trimethylbenzene	0.0018	U
		1,3,5-Trimethylbenzene	0.0018	U
		Xylenes (total)	0.0018	U
		SVOCs		
		Naphthalene	0.18	U
		Metals		
Lead	4.67			

Sample ID	Depth (ft)	Chemical	Concentration	Unit
PB-883-13	4.5-5(ft)	VOCs		
		Benzene	0.00048	U
		Cumene	0.00096	U
		Ethyl Benzene	0.00096	U



Legend

- Tank Group 04 Boundary
- Tank Group 05 Boundary
- Previously Closed AST
- Berm Boundary
- Associated Piping
- Exceeds Routine Worker Vapor Intrusion RBSL
- Exceeds Routine Worker or Construction Worker Direct Contact RBSL
- No Exceedances

Sample Location

Sampling Depth

Result/RBSL Exceeded

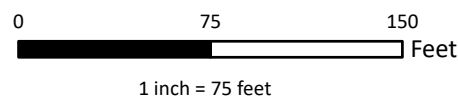
Exceedance Code

TG07-MW-07	1/6/2023
VOCs	
Benzene	240 [ACDEF]
Cumene	5.3 [EF]
Toluene	27 [A]
Xylenes (total)	1.67 [E]
SVOCs	
Naphthalene	0.13 [E]

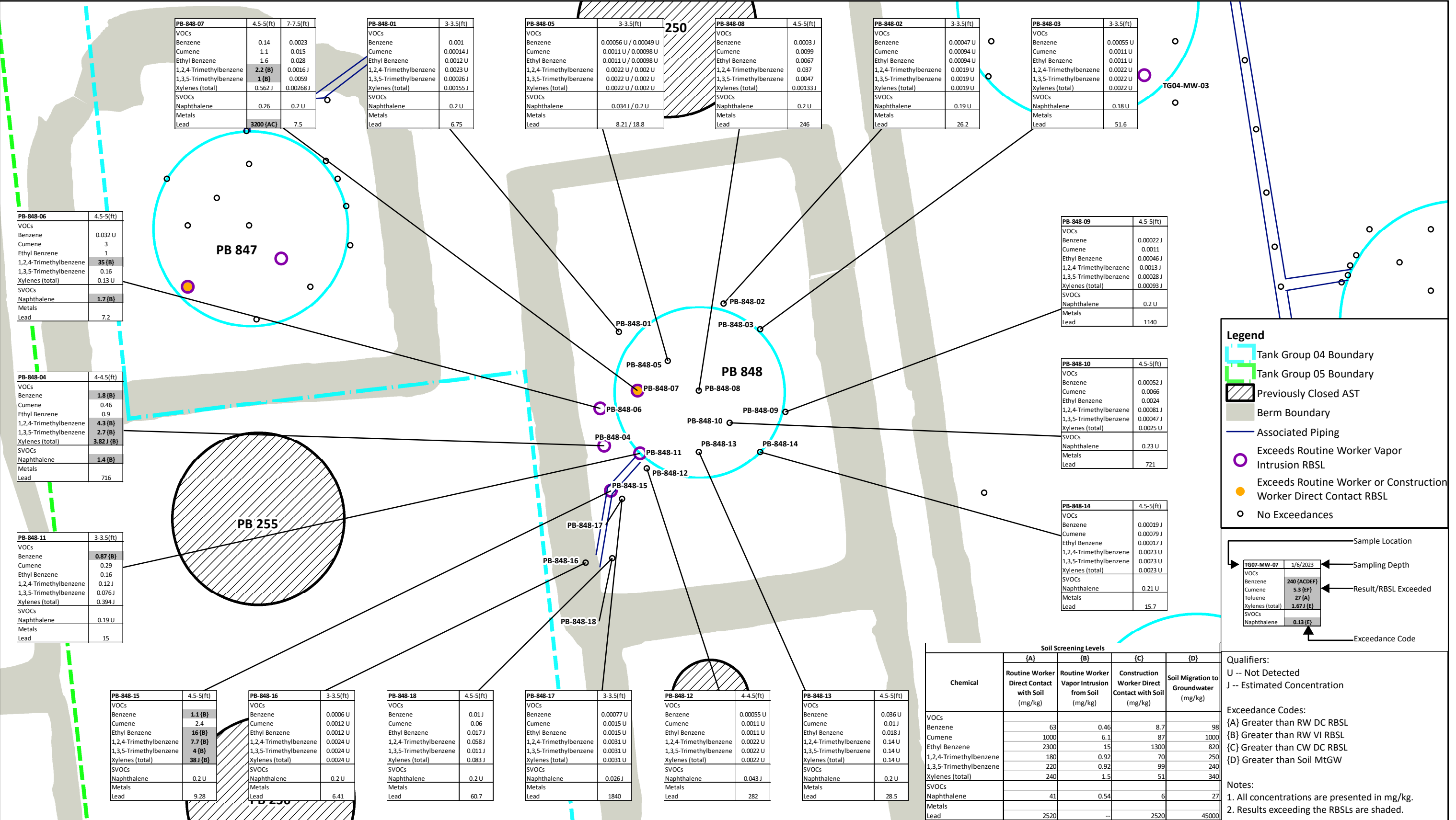
Qualifiers:
 U -- Not Detected
 J -- Estimated Concentration

Exceedance Codes:
 {A} Greater than RW DC RBSL
 {B} Greater than RW VI RBSL
 {C} Greater than CW DC RBSL
 {D} Greater than Soil MtGw

Notes:
 1. All concentrations are presented in mg/kg.
 2. Results exceeding the RBSLs are shaded.



 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	<p>Soil Sample Results Tank Group 04 (AST PB 847)</p> <p>Figure 4H</p>
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	



PB-848-07	4.5-5(ft)	7-7.5(ft)
VOCs		
Benzene	0.14	0.0023
Cumene	1.1	0.015
Ethyl Benzene	1.6	0.028
1,2,4-Trimethylbenzene	2.2 (B)	0.0016 J
1,3,5-Trimethylbenzene	1 (B)	0.0059
Xylenes (total)	0.562 J	0.00268 J
SVOCs		
Naphthalene	0.26	0.2 U
Metals		
Lead	3200 (AC)	7.5

PB-848-01	3-3.5(ft)
VOCs	
Benzene	0.001
Cumene	0.00014 J
Ethyl Benzene	0.0012 U
1,2,4-Trimethylbenzene	0.0023 U
1,3,5-Trimethylbenzene	0.00026 J
Xylenes (total)	0.00155 J
SVOCs	
Naphthalene	0.2 U
Metals	
Lead	6.75

PB-848-05	3-3.5(ft)
VOCs	
Benzene	0.00056 U / 0.00049 U
Cumene	0.0011 U / 0.00098 U
Ethyl Benzene	0.0011 U / 0.00098 U
1,2,4-Trimethylbenzene	0.0022 U / 0.002 U
1,3,5-Trimethylbenzene	0.0022 U / 0.002 U
Xylenes (total)	0.0022 U / 0.002 U
SVOCs	
Naphthalene	0.034 J / 0.2 U
Metals	
Lead	8.21 / 18.8

PB-848-08	4.5-5(ft)
VOCs	
Benzene	0.0003 J
Cumene	0.0009
Ethyl Benzene	0.0067
1,2,4-Trimethylbenzene	0.037
1,3,5-Trimethylbenzene	0.0047
Xylenes (total)	0.00133 J
SVOCs	
Naphthalene	0.2 U
Metals	
Lead	246

PB-848-02	3-3.5(ft)
VOCs	
Benzene	0.00047 U
Cumene	0.00094 U
Ethyl Benzene	0.00094 U
1,2,4-Trimethylbenzene	0.0019 U
1,3,5-Trimethylbenzene	0.0019 U
Xylenes (total)	0.0019 U
SVOCs	
Naphthalene	0.19 U
Metals	
Lead	26.2

PB-848-03	3-3.5(ft)
VOCs	
Benzene	0.00055 U
Cumene	0.0011 U
Ethyl Benzene	0.0011 U
1,2,4-Trimethylbenzene	0.0022 U
1,3,5-Trimethylbenzene	0.0022 U
Xylenes (total)	0.0022 U
SVOCs	
Naphthalene	0.18 U
Metals	
Lead	51.6

PB-848-06	4.5-5(ft)
VOCs	
Benzene	0.032 U
Cumene	3
Ethyl Benzene	1
1,2,4-Trimethylbenzene	35 (B)
1,3,5-Trimethylbenzene	0.16
Xylenes (total)	0.13 U
SVOCs	
Naphthalene	1.7 (B)
Metals	
Lead	7.2

PB-848-04	4-4.5(ft)
VOCs	
Benzene	1.8 (B)
Cumene	0.46
Ethyl Benzene	0.9
1,2,4-Trimethylbenzene	4.3 (B)
1,3,5-Trimethylbenzene	2.7 (B)
Xylenes (total)	3.82 J (B)
SVOCs	
Naphthalene	1.4 (B)
Metals	
Lead	716

PB-848-11	3-3.5(ft)
VOCs	
Benzene	0.87 (B)
Cumene	0.29
Ethyl Benzene	0.16
1,2,4-Trimethylbenzene	0.12 J
1,3,5-Trimethylbenzene	0.076 J
Xylenes (total)	0.394 J
SVOCs	
Naphthalene	0.19 U
Metals	
Lead	15

PB-848-15	4.5-5(ft)
VOCs	
Benzene	1.1 (B)
Cumene	2.4
Ethyl Benzene	16 (B)
1,2,4-Trimethylbenzene	7.7 (B)
1,3,5-Trimethylbenzene	4 (B)
Xylenes (total)	38 J (B)
SVOCs	
Naphthalene	0.2 U
Metals	
Lead	9.28

PB-848-16	3-3.5(ft)
VOCs	
Benzene	0.0006 U
Cumene	0.0012 U
Ethyl Benzene	0.0012 U
1,2,4-Trimethylbenzene	0.0024 U
1,3,5-Trimethylbenzene	0.0024 U
Xylenes (total)	0.0024 U
SVOCs	
Naphthalene	0.2 U
Metals	
Lead	6.41

PB-848-18	4.5-5(ft)
VOCs	
Benzene	0.01 J
Cumene	0.06
Ethyl Benzene	0.017 J
1,2,4-Trimethylbenzene	0.058 J
1,3,5-Trimethylbenzene	0.011 J
Xylenes (total)	0.083 J
SVOCs	
Naphthalene	0.2 U
Metals	
Lead	60.7

PB-848-17	3-3.5(ft)
VOCs	
Benzene	0.00077 U
Cumene	0.0015 U
Ethyl Benzene	0.0015 U
1,2,4-Trimethylbenzene	0.0031 U
1,3,5-Trimethylbenzene	0.0031 U
Xylenes (total)	0.0031 U
SVOCs	
Naphthalene	0.026 J
Metals	
Lead	1840

PB-848-12	4-4.5(ft)
VOCs	
Benzene	0.00055 U
Cumene	0.0011 U
Ethyl Benzene	0.0011 U
1,2,4-Trimethylbenzene	0.0022 U
1,3,5-Trimethylbenzene	0.0022 U
Xylenes (total)	0.0022 U
SVOCs	
Naphthalene	0.043 J
Metals	
Lead	282

PB-848-13	4.5-5(ft)
VOCs	
Benzene	0.036 U
Cumene	0.01 J
Ethyl Benzene	0.018 J
1,2,4-Trimethylbenzene	0.14 U
1,3,5-Trimethylbenzene	0.14 U
Xylenes (total)	0.14 U
SVOCs	
Naphthalene	0.2 U
Metals	
Lead	28.5

Chemical	Soil Screening Levels			
	{A}	{B}	{C}	{D}
	Routine Worker Direct Contact with Soil (mg/kg)	Routine Worker Vapor Intrusion from Soil (mg/kg)	Construction Worker Direct Contact with Soil (mg/kg)	Soil Migration to Groundwater (mg/kg)
VOCs				
Benzene		0.46	8.7	98
Cumene	63	6.1	87	1000
Ethyl Benzene	2300	15	1300	820
1,2,4-Trimethylbenzene	180	0.92	70	250
1,3,5-Trimethylbenzene	220	0.92	99	240
Xylenes (total)	240	1.5	51	340
SVOCs				
Naphthalene	41	0.54	6	27
Metals				
Lead	2520	--	2520	45000

Legend

- Tank Group 04 Boundary
- Tank Group 05 Boundary
- Previously Closed AST
- Berm Boundary
- Associated Piping
- Exceeds Routine Worker Vapor Intrusion RBSL
- Exceeds Routine Worker or Construction Worker Direct Contact RBSL
- No Exceedances

Sample Location

Sampling Depth

Result/RBSL Exceeded

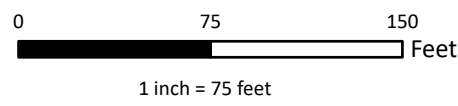
Exceedance Code

Sample ID	Date	VOCs	SVOCs
TG04-MW-07	1/6/2023	240 (ACDEF)	0.13 (E)
		5.3 (EF)	
		27 (A)	
		1.67 (E)	

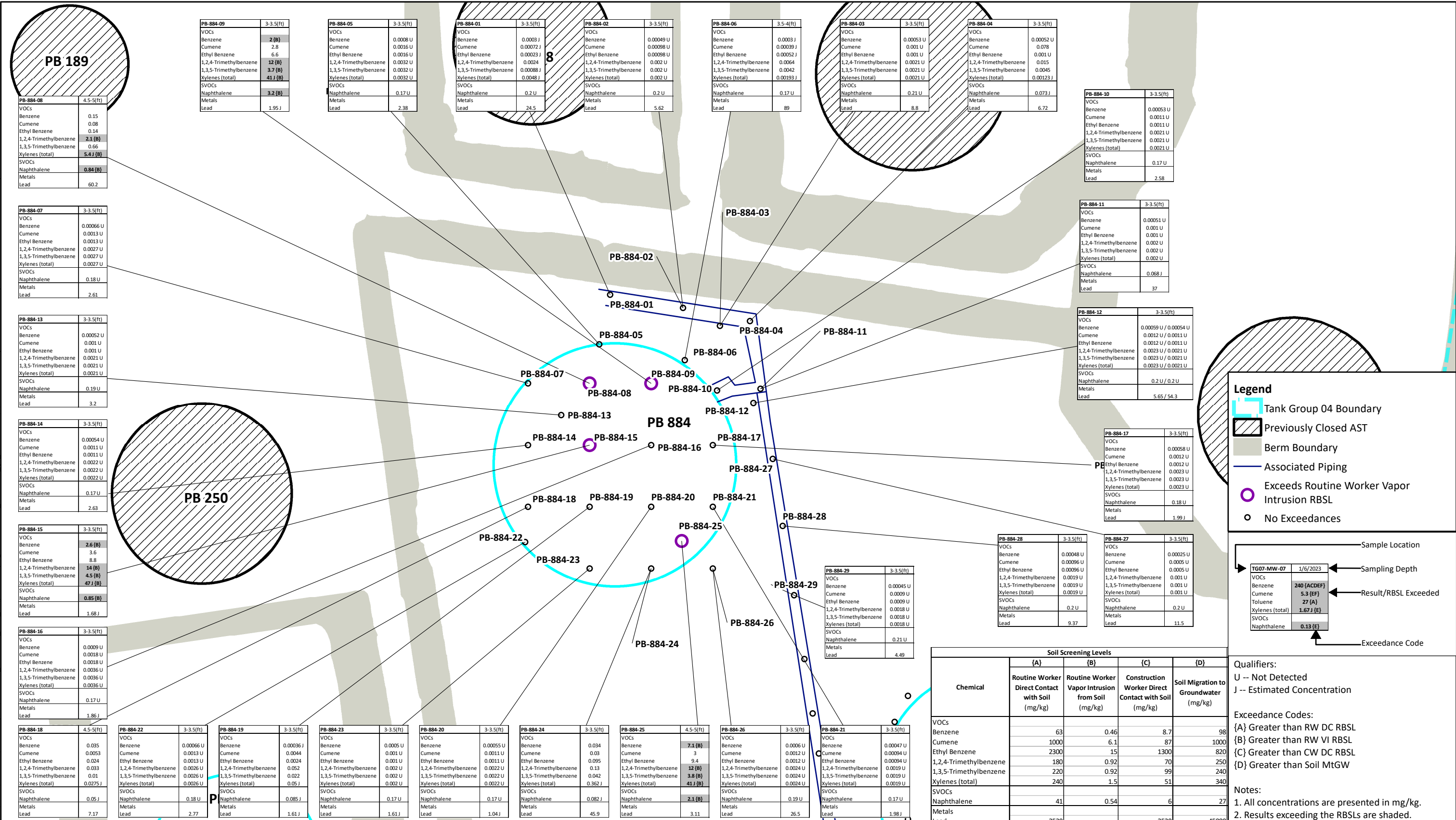
Qualifiers:
 U -- Not Detected
 J -- Estimated Concentration

Exceedance Codes:
 {A} Greater than RW DC RBSL
 {B} Greater than RW VI RBSL
 {C} Greater than CW DC RBSL
 {D} Greater than Soil MtGW

Notes:
 1. All concentrations are presented in mg/kg.
 2. Results exceeding the RBSLs are shaded.



<p>SAFETY FIRST</p>	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	<p>Soil Sample Results Tank Group 04 (AST PB 848)</p> <p>Figure 41</p>
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	



Legend

- Tank Group 04 Boundary
- Previously Closed AST
- Berm Boundary
- Associated Piping
- Exceeds Routine Worker Vapor Intrusion RBSL
- No Exceedances

Sample Location: TG07-MW-07

Sampling Depth: 1/6/2023

Result/RBSL Exceeded:

VOCs	240 [ACDEF]
Benzene	5.3 [EF]
Cumene	27 [A]
Toluene	1.67 [E]
Xylenes (total)	0.13 [E]
SVOCs	
Naphthalene	
Metals	
Lead	

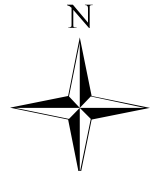
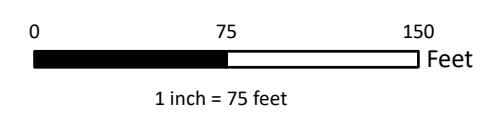
Exceedance Code

Qualifiers:
U -- Not Detected
J -- Estimated Concentration

Exceedance Codes:
{A} Greater than RW DC RBSL
{B} Greater than RW VI RBSL
{C} Greater than CW DC RBSL
{D} Greater than Soil MtGw

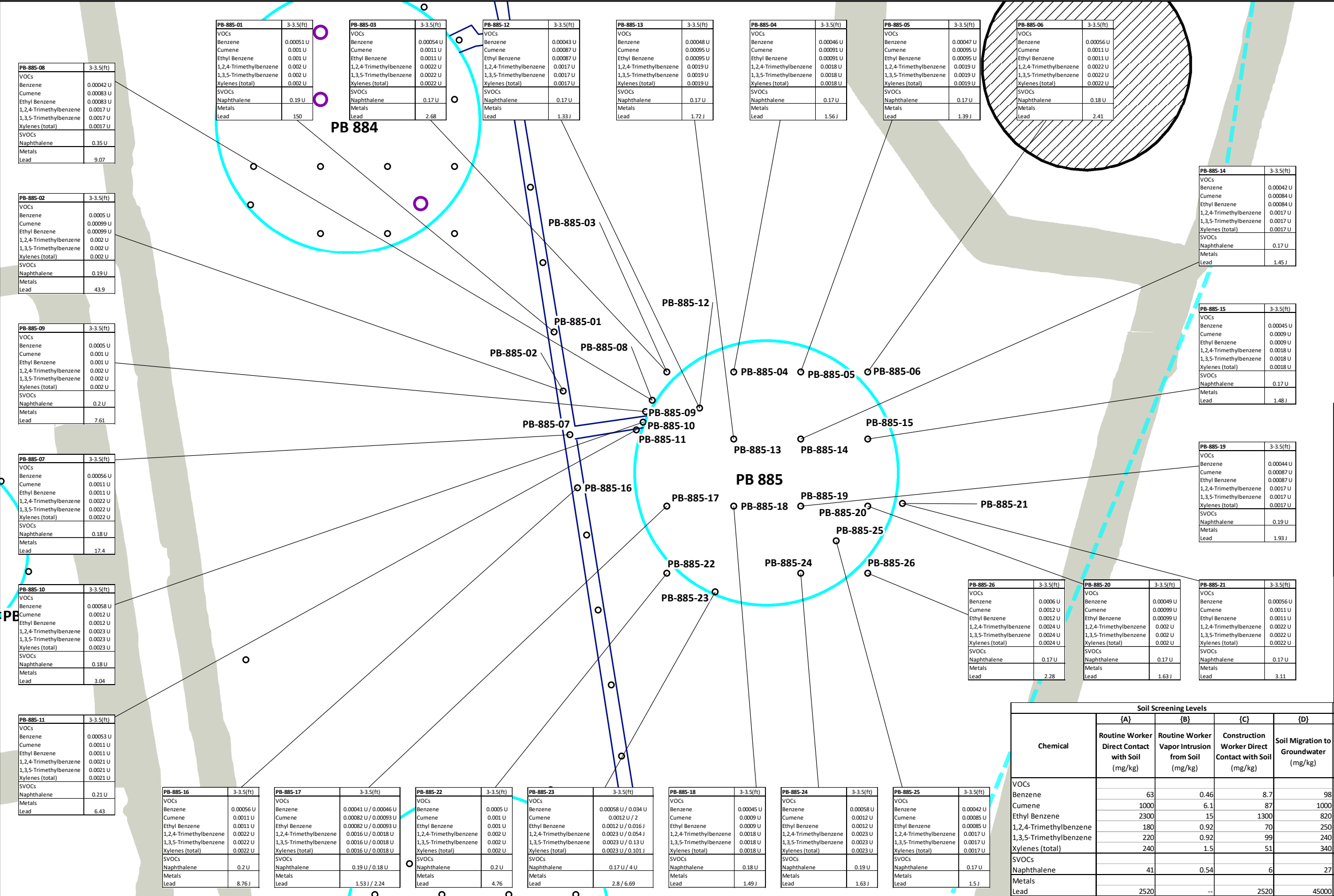
Notes:
1. All concentrations are presented in mg/kg.
2. Results exceeding the RBSLs are shaded.

Chemical	Soil Screening Levels			
	{A}	{B}	{C}	{D}
VOCs				
Benzene	63	0.46	8.7	98
Cumene	1000	6.1	87	1000
Ethyl Benzene	2300	15	1300	820
1,2,4-Trimethylbenzene	180	0.92	70	250
1,3,5-Trimethylbenzene	220	0.92	99	240
Xylenes (total)	240	1.5	51	340
SVOCs				
Naphthalene	41	0.54	6	27
Metals				
Lead	2520	--	2520	45000



SAFETY FIRST terraphase engineering	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Soil Sample Results Tank Group 04 (AST PB 884) Figure 4J
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	

File: N:\GIS\PA\044.001_PESRM-PES\WXS\AST\Work\Tank Group 04\20230113 Databases RBSL_SOV\20230113 Figure 4K - PB 885 Databases SO RBSLs.mxd 1/19/2023 Created by Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend

- Tank Group 04 Boundary
- Previously Closed AST
- Berm Boundary
- Associated Piping
- Exceeds Routine Worker Vapor Intrusion RBSL
- No Exceedances

Sample Location

Sampling Depth

Result/RBSL Exceeded

Exceedance Code

TG07-MW-07	1/6/2023	240 [ACDEF]	5.3 [EF]	27 [A]	1.67 [E]	0.13 [E]
VOCs						
Benzene						
Cumene						
Toluene						
Xylenes (total)						
SVOCs						
Naphthalene						

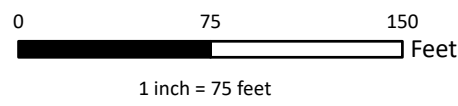
Qualifiers:
 U -- Not Detected
 J -- Estimated Concentration

Exceedance Codes:
 {A} Greater than RW DC RBSL
 {B} Greater than RW VI RBSL
 {C} Greater than CW DC RBSL
 {D} Greater than Soil MtGw

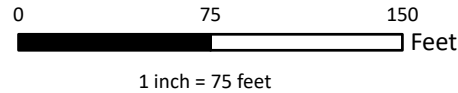
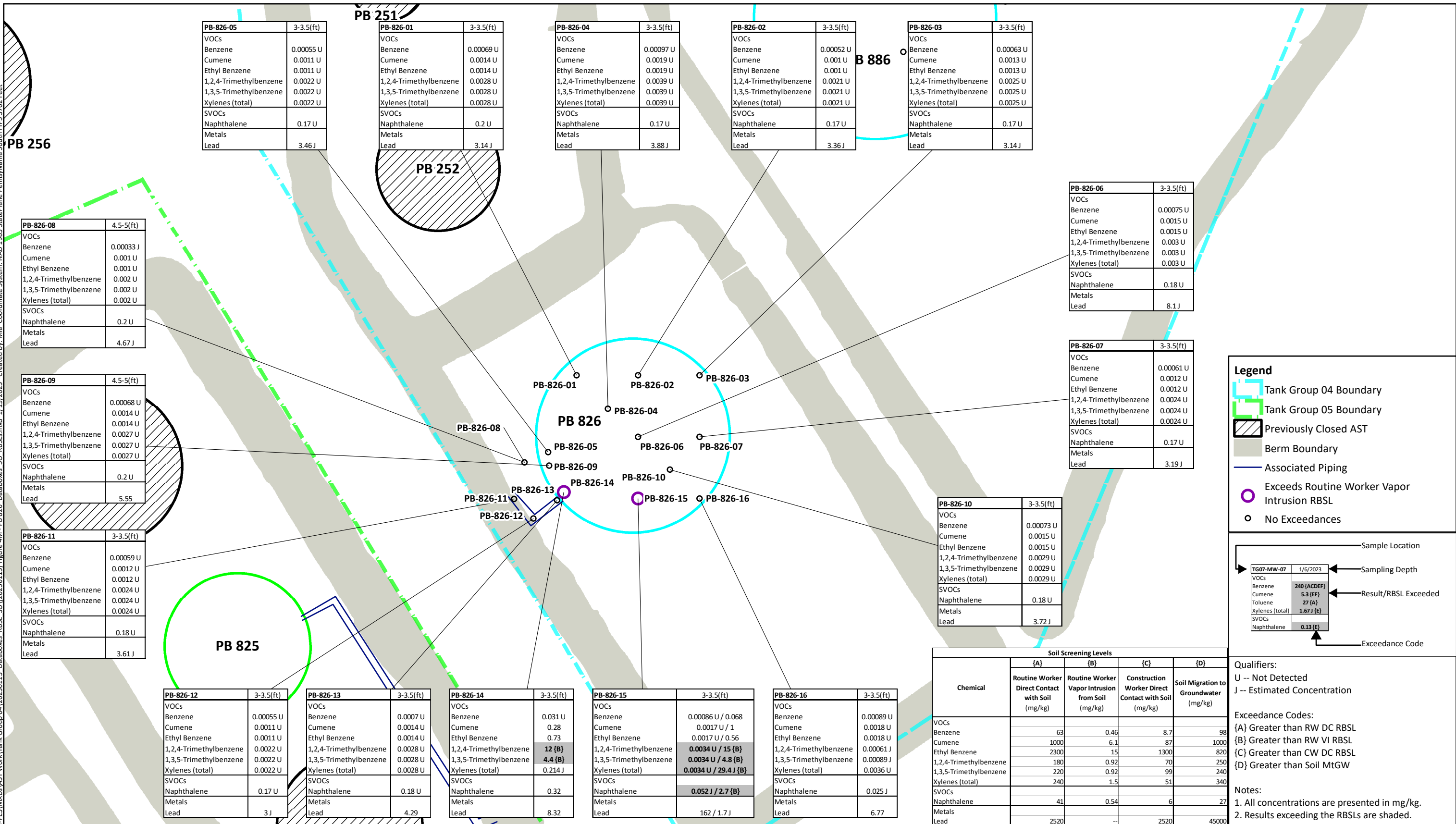
Notes:
 1. All concentrations are presented in mg/kg.
 2. Results exceeding the RBSLs are shaded.

Chemical	Soil Screening Levels			
	{A}	{B}	{C}	{D}
	Routine Worker Direct Contact with Soil (mg/kg)	Routine Worker Vapor Intrusion from Soil (mg/kg)	Construction Worker Direct Contact with Soil (mg/kg)	Soil Migration to Groundwater (mg/kg)
VOCs				
Benzene	63	0.46	8.7	98
Cumene	1000	6.1	87	1000
Ethyl Benzene	2300	0.0085 U	1300	820
1,2,4-Trimethylbenzene	180	0.92	70	250
1,3,5-Trimethylbenzene	220	0.92	99	240
Xylenes (total)	240	1.5	51	340
SVOCs				
Naphthalene	41	0.54	6	27
Metals				
Lead	2520	--	2520	45000

PB-885-16 3-3.5(ft) VOCs Benzene 0.00056 U Cumene 0.0011 U Ethyl Benzene 0.0011 U 1,2,4-Trimethylbenzene 0.0022 U 1,3,5-Trimethylbenzene 0.0022 U Xylenes (total) 0.0022 U SVOCs Naphthalene 0.2 U Metals Lead 8.76 J	PB-885-17 3-3.5(ft) VOCs Benzene 0.00041 U / 0.00046 U Cumene 0.00082 U / 0.00093 U Ethyl Benzene 0.0012 U / 0.0013 U 1,2,4-Trimethylbenzene 0.0016 U / 0.0018 U 1,3,5-Trimethylbenzene 0.0016 U / 0.0018 U Xylenes (total) 0.0016 U / 0.0018 U SVOCs Naphthalene 0.19 U / 0.18 U Metals Lead 1.53 J / 2.24	PB-885-22 3-3.5(ft) VOCs Benzene 0.0005 U Cumene 0.001 U Ethyl Benzene 0.001 U 1,2,4-Trimethylbenzene 0.002 U 1,3,5-Trimethylbenzene 0.002 U Xylenes (total) 0.002 U SVOCs Naphthalene 0.2 U Metals Lead 4.76	PB-885-23 3-3.5(ft) VOCs Benzene 0.00058 U / 0.034 U Cumene 0.0012 U / 0.016 J Ethyl Benzene 0.0012 U / 0.054 J 1,2,4-Trimethylbenzene 0.0023 U / 0.13 U 1,3,5-Trimethylbenzene 0.0023 U / 0.101 J Xylenes (total) 0.0023 U / 0.101 J SVOCs Naphthalene 0.17 U / 4 U Metals Lead 2.8 / 6.69	PB-885-18 3-3.5(ft) VOCs Benzene 0.00048 U Cumene 0.00095 U Ethyl Benzene 0.00095 U 1,2,4-Trimethylbenzene 0.0019 U 1,3,5-Trimethylbenzene 0.0019 U Xylenes (total) 0.0019 U SVOCs Naphthalene 0.17 U Metals Lead 1.49 J	PB-885-24 3-3.5(ft) VOCs Benzene 0.00058 U Cumene 0.0012 U Ethyl Benzene 0.0012 U 1,2,4-Trimethylbenzene 0.0023 U 1,3,5-Trimethylbenzene 0.0023 U Xylenes (total) 0.0023 U SVOCs Naphthalene 0.19 U Metals Lead 1.63 J	PB-885-25 3-3.5(ft) VOCs Benzene 0.00042 U Cumene 0.00085 U Ethyl Benzene 0.00085 U 1,2,4-Trimethylbenzene 0.0017 U 1,3,5-Trimethylbenzene 0.0017 U Xylenes (total) 0.0017 U SVOCs Naphthalene 0.17 U Metals Lead 1.5 J
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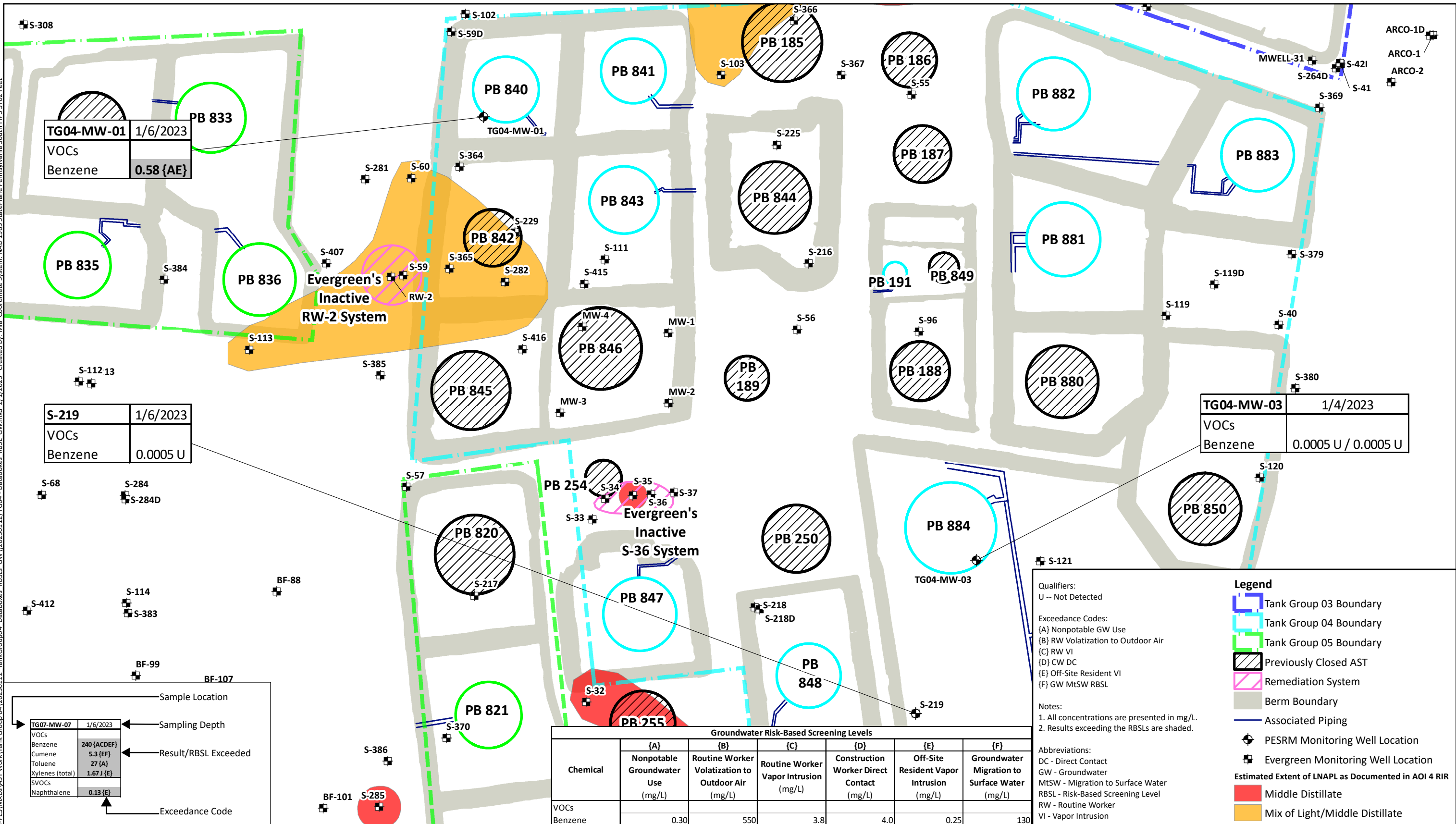


SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Soil Sample Results Tank Group 04 (AST PB 885) Figure 4K
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	



 SAFETY FIRST terraphase engineering	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Soil Sample Results Tank Group 04 (AST PB 826) Figure 4M
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	

File: N:\GIS\PA\044.001_PESRM-PES\MXDs\AST\Work\Tank Group 04\20230112_TankGroup04_Databases\RBSLs_GW\20230112_TG04 - Databases\RBSLs_GW.mxd 2/1/2023 Created by: Mia Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



TG04-MW-01	1/6/2023
VOCs	
Benzene	0.58 {AE}

S-219	1/6/2023
VOCs	
Benzene	0.0005 U

TG04-MW-03	1/4/2023
VOCs	
Benzene	0.0005 U / 0.0005 U

TG07-MW-07	1/6/2023
VOCs	
Benzene	240 {ACDEF}
Cumene	5.3 {EF}
Toluene	27 {A}
Xylenes (total)	1.67 {E}
SVOCs	
Naphthalene	0.13 {E}

Chemical	Groundwater Risk-Based Screening Levels					
	{A}	{B}	{C}	{D}	{E}	{F}
VOCs						
Benzene	0.30	550	3.8	4.0	0.25	130

Qualifiers:
U -- Not Detected

Exceedance Codes:
{A} Nonpotable GW Use
{B} RW Volatization to Outdoor Air
{C} RW VI
{D} CW DC
{E} Off-Site Resident VI
{F} GW MtSW RBSL

Notes:
1. All concentrations are presented in mg/L.
2. Results exceeding the RBSLs are shaded.

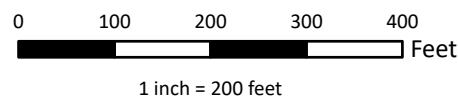
Abbreviations:
DC - Direct Contact
GW - Groundwater
MtSW - Migration to Surface Water
RBSL - Risk-Based Screening Level
RW - Routine Worker
VI - Vapor Intrusion

Legend

- Tank Group 03 Boundary
- Tank Group 04 Boundary
- Tank Group 05 Boundary
- Previously Closed AST
- Remediation System
- Berm Boundary
- Associated Piping
- PESRM Monitoring Well Location
- Evergreen Monitoring Well Location

Estimated Extent of LNAPL as Documented in AOI 4 RIR

- Middle Distillate
- Mix of Light/Middle Distillate



	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Source Area Groundwater Results Tank Group 04 Figure 5
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	

Appendix A

Human Health Risk Assessment Supporting Information and Calculations



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1 Introduction

This appendix provides supplemental information supporting the human health risk assessment presented in Section 5 of the *Site-Specific Human Health Risk Assessment* (the Risk Assessment). The methods used in the human health risk assessment are based on Pennsylvania Department of Environmental Protection (PADEP) and the United States Environmental Protection Agency (USEPA) risk assessment guidance.

Section 5.3.1 of the Risk Assessment describes how cumulative cancer risks and noncancer hazardous Indexes (HIs) are calculated for each of the receptors potentially exposed to constituents of potential concerns (COPCs) at the Site. Several key elements of the risk assessment calculations are presented and discussed in the Risk Assessment and not repeated in this appendix. This includes the selection of COPCs (Section 3.1), the compilation of toxicity values (Section 5.2), the identification of receptors and scenarios for potential human exposure (Section 5.1.1), exposure factors used (Section 5.1.4), and the calculation of receptor specific exposure concentrations (Section 5.1.2).

This appendix provides additional details regarding how the risk calculations are performed for each receptor. This includes the fate and transport modeling needed to estimate exposure concentrations for specific receptors and specific exposure scenarios. The chemical properties used in these fate and transport modeling are provided in Attachment 1, Table 1.

The appendix is organized into sections corresponding to the following potentially exposed populations discussed in Section 5.1 of the Risk Assessment:

- Routine Workers
- Maintenance Workers
- Construction Workers
- Off-Site Residents

2 Risk Estimation Methodology

Section 5.3.1 of the Risk Assessment describes how cancer risk and noncancer HI are calculated for receptors potentially exposed to COPCs in soil and groundwater at the Site. The exposure factors used in the risk calculations and their bases are presented in Section 5.1.4 of the Risk Assessment and are not repeated herein.

The cancer risk associated with potential exposure to a carcinogenic constituent via ingestion and dermal contact is calculated by multiplying an estimate of the *LADD* for a particular exposure scenario by the cancer *SF* for the constituent as follows:

$$Risk = LADD \cdot SF$$



For the inhalation route, the cancer risk is calculated using the constituent concentration in air (C_{air}) and the URF, as follows:

$$Risk = URF \cdot C_{air} \cdot \frac{ET \cdot EF \cdot ED}{AT_c}$$

Where ET is exposure time, EF is exposure frequency, ED is exposure duration, and AT_c is the averaging time for carcinogens.

The noncancer hazard quotient (HQ) associated with potential exposure via incidental ingestion and dermal contact was calculated by dividing an estimate of the ADD by the RfD for the constituent as follows:

$$HQ = \frac{ADD}{RfD}$$

For the inhalation route, the HQ was calculated using C_{air} and the RfC , as follows:

$$HQ = \frac{C_{air}}{RfC} \cdot \frac{ET \cdot EF \cdot ED}{AT_{nc}}$$

In this risk assessment, unit cancer risks and unit HQs are calculated for a unit constituent concentration (C_{unit}). C_{unit} is 1 mg/kg for soil and 1 mg/L for groundwater. Because risk estimates scale directly with the constituent concentration (except for cancer risk estimates at very high doses), these unit risks and unit HQs can be calculated once and used to calculate cancer and noncancer risk estimates efficiently for a large number of locations by multiplying the constituent concentrations for each location by the unit risks and unit HQs. The unit risks and unit HQs for all routes of exposure (incidental ingestion, dermal contact, vapor inhalation, and/or particulate inhalation) for a given receptor to constituents in a given environmental medium are conservatively summed to produce a single unit risk and unit HQ for each constituent. The cancer risk and noncancer HQ for a particular constituent i at a particular location are calculated as follows:

$$Risk_i = \frac{C_i \cdot UnitRisk_i}{C_{unit}}$$

$$HQ_i = \frac{C_i \cdot UnitHQ_i}{C_{unit}}$$

The media-specific cumulative cancer risk and noncancer HI from exposure to the combination of COPC are estimated following USEPA (1989) guidance, as follows:

$$Cumulative\ Risk = \sum_i Risk_i$$

$$Hazard\ Index = \sum_i HQ_i$$

Where $Risk_i$ is the estimated cancer risk for the i^{th} constituent and HQ_i is the HQ for the i^{th} constituent. This approach may result in estimates of media-specific cumulative cancer risk and HI that are more



conservative than necessary. For example, different COPC may cause different and unrelated noncancer health effects, so summing the HQs for their individual effects would overestimate the significance of their combined effects. Nonetheless, this approach is used here as a conservative assessment tool.

Estimated media-specific cumulative cancer risks for each receptor population are compared to PADEP's risk management goals established in Section 250.402(b). Specifically, cumulative cancer risks are compared to an incremental increased cancer risk goal of 1×10^{-4} while noncancer HIs are compared to an HI of 1. For constituents with different and unrelated noncancer health effects, summing the HQs would overestimate the significance of their combined effects. When such a summation results in an HI that exceeds 1, the HQs may be segregated by target organ and/or critical health effects (USEPA 1989). Risk estimates equal to or below these goals represent levels which would not warrant risk management action.

The following sections discuss the calculation of unit risks/HQs for each receptor exposure scenario.

2.1 Routine Workers

The risk assessment evaluates nonresidential exposures to COPC via: (1) soil contact and inhalation during outdoor activities, (2) vapor intrusion from soil and groundwater, (3) volatilization into outdoor air from groundwater, and (4) nonpotable use of groundwater (discussed in Section 2.6).

2.1.1 Exposure to Soil During Outdoor Activities

Routine workers could be exposed to surface soil via incidental ingestion, dermal contact, and inhalation of vapors and particulates during outdoor activities. Risk estimates are calculated using unit risks and unit HQs as discussed above and in Section 5.3 of the Risk Assessment. The receptor specific calculations are discussed in this section.

Lifetime Average Daily Dose

The lifetime average daily doses for soil ingestion ($LADD_{ing}$) and soil dermal contact ($LADD_{derm}$) are calculated as follows, using the exposure factors for resident soil contact (Section 5.1.4 of the Risk Assessment):

$$LADD_{ing} = C_{soil} \cdot \frac{IR \cdot FC \cdot EF \cdot ED}{BW \cdot AT_c}$$

$$LADD_{derm} = C_{soil} \cdot \frac{SA \cdot AF \cdot ABS_{derm} \cdot FC \cdot EF \cdot ED}{BW \cdot AT_c}$$

where C_{soil} is the constituent concentration in soil, IR is the ingestion rate, FC is the fraction of the soil that is contaminated, SA is the exposed skin surface area, AF is the soil-to-skin adherence factor, and ABS_{derm} is the constituent-specific dermal absorption factor.

Average Daily Dose

The average daily doses for soil ingestion (ADD_{ing}) and soil dermal contact (ADD_{derm}) are calculated as follows:



$$ADD_{ing} = C_{soil} \cdot \frac{IR \cdot FC \cdot EF \cdot ED}{BW \cdot AT_{nc}}$$

$$ADD_{derm} = C_{soil} \cdot \frac{SA \cdot AF \cdot ABS_{derm} \cdot FC \cdot EF \cdot ED}{BW \cdot AT_{nc}}$$

Estimating Air Concentrations

For the inhalation route, the air concentrations of vapors and particulates from soil are calculated as follows:

$$C_{air} = J \cdot \frac{C}{Q}$$

where $J \cdot C/Q$ is an air concentration that is normalized to unit concentration in soil. The J term is the normalized average vapor (J_v) or particulate flux ($J_{10,w}$), and the C/Q term is the air concentration normalized to a unit flux (i.e., C/Q is an air dispersion factor).

The normalized average vapor flux J_v of a constituent from unsaturated soil is conservatively estimated using an unsteady-state model derived by Jury et al. (1983). This model conservatively assumes that volatile constituents are present in the soil to a finite depth equal to the approximate depth to groundwater at the Site of 19 ft bgs. The equation for J_v is given by:

$$J_v = \frac{C_0}{T} \left[Z_1 \operatorname{erfc} \left(\frac{Z_1}{2\sqrt{D_E T}} \right) + 2 \sqrt{\frac{D_E T}{\pi}} \left(1 - e^{-\frac{Z_1^2}{4D_E T}} \right) \right]$$

where,

$$D_E = \frac{D_G H + D_L}{\rho_b K_d + \theta_w + \theta_a H}$$

$$D_G = D_{air} \cdot \frac{\theta_a^{10/3}}{n^2}$$

$$D_L = D_{water} \cdot \frac{\theta_w^{10/3}}{n^2}$$

$C_{s,0}$ is the concentration in soil, ρ_b is the soil bulk density, T is the averaging period (equivalent to ED), H is the Henry's law constant, K_d is the equilibrium-partitioning coefficient, θ_w is the water-filled soil porosity, θ_a is the air-filled soil porosity, D_{air} is diffusion rate through air, D_{water} is the diffusion rate through water, and n is total porosity. For this risk assessment, Henry's law constants have been adjusted to reflect a specific subsurface temperature of 18°C, which is conservative (PADEP 2021).

Derivation of these equations and definition of the equation parameters can be found in the Jury et al. 1983 journal article and in USEPA guidance (1996a, 1996b), and therefore, are not repeated here. The calculation of J_v was performed using values for constituent-specific parameters and default soil parameters recommended in the USEPA guidance (2004a), using a soil type of sand, which is representative of the soil type found at the Site. The calculation of J_v is shown in Attachment 2, Table 1.



The normalized average particulate flux $J_{10,w}$ of a constituent from soil is conservatively estimated using the “unlimited reservoir” model that USEPA has adapted for screening-level analysis of particulate emissions from soil (USEPA 1996a, 1996b). This model assumes that particulate emissions are created by wind erosion. The equation for $J_{10,w}$ is given by:

$$J_{10,w} = 0.036 \cdot (1 - G) \cdot \left(\frac{u_m}{u_t}\right)^3 \cdot F(x) \frac{g}{m^2 hr} \cdot \frac{hr}{60^2 sec} \cdot \frac{10^{-3} kg}{g}$$

where G is fraction of ground/vegetative cover, u_m is the mean annual wind speed at the nearest weather station which is located in Philadelphia, Pennsylvania (NOAA 2018), u_t is the equivalent threshold wind speed at the anemometer height at which u_m was measured in Philadelphia, Pennsylvania, and $F(x)$ is a function dependent on u_m/u_t . The details of this model can be found in USEPA guidance (1996a, 1996b), and are not repeated here. The default parameter values recommended in the USEPA guidance (1996a, 1996b) are used with site-specific wind speed in calculating $J_{10,w}$. The calculation of $J_{10,w}$ is shown in Attachment 2, Table 2.

The C/Q term is estimated using the empirical correlation in USEPA’s *Supplemental Soil Screening Guidance* (2002), using the correlation coefficients for Philadelphia, Pennsylvania, and assuming a source area of 70.6 acre. This source area size is a conservative estimate of the area potentially impacted by the release. The calculation of C/Q is shown in Attachment 2, Table 3.

The unit risk and unit HQ calculations are shown in Attachment 2 of this appendix, and the computation of the upper-bound site-related single-chemical cancer risk and noncancer HQ estimates, which are summed to estimate the media-specific cumulative cancer risk and noncancer HI, are shown in Attachment 8 of this appendix.

2.1.2 Vapor Intrusion

To evaluate potential future vapor intrusion exposures to soil and shallow groundwater in a hypothetical building, vapor intrusion risk estimates are developed using the following modeling approaches and input parameters discussed below.

2.1.2.1 Soil

For the vapor intrusion inhalation exposure pathway, estimates of cancer risk and noncancer HQ/HI are calculated using unit risks and unit HQs as discussed above and in Section 5.3 of the Risk Assessment.

Modeling Vapor Intrusion from Soil

For the indoor air exposure pathway, estimates of cancer risk and noncancer HQ are calculated as follows:

$$Risk = C_{building} \cdot URF \cdot \frac{ET \cdot EF \cdot ED}{AT_c}$$

$$HQ = \frac{C_{building}}{RfC} \cdot \frac{ET \cdot EF \cdot ED}{AT_{nc}}$$



where $C_{building}$ is the concentration in indoor air. For assessing routine worker exposures, chronic $RfCs$ are used. The indoor air concentration is estimated using the modeling approach and input parameter values discussed below.

The indoor air concentrations are estimated using the following relationships described by Johnson and Ettinger (1991):

$$C_{building} = \alpha \cdot C_{source}$$

where α is an attenuation coefficient and C_{source} is the source vapor concentration that is given by the following equation:

$$C_{source} = C_{soil} \left(\frac{K_d}{H} + \frac{\theta_w}{\rho_b H} + \frac{\theta_a}{\rho_b} \right)^{-1}$$

The attenuation coefficient, assuming that constituents are present in the soil at constant concentrations, is given by the following equation:

$$\alpha = \frac{\left[\frac{D_T^{eff} A_B}{Q_{building} L_T} \right] \exp \left(\frac{Q_{soil} L_{crack}}{D^{crack} A_{crack}} \right)}{\exp \left(\frac{Q_{soil} L_{crack}}{D^{crack} A_{crack}} \right) + \left[\frac{D_T^{eff} A_B}{Q_{building} L_T} \right] + \left[\frac{D_T^{eff} A_B}{Q_{soil} L_T} \right] \left[\exp \left(\frac{Q_{soil} L_{crack}}{D^{crack} A_{crack}} \right) - 1 \right]}$$

Derivation of this equation and definition of the equation parameters can be found in Johnson and Ettinger's 1991 journal article and therefore are not repeated here.

The effective diffusion coefficient term D_T^{eff} in the equation for the attenuation coefficient α is calculated using a soil-water profile that is estimated using a soil type of sand, which is representative of the soil type found at the Site. The soil-water profile in the vadose zone is estimated using the van Genuchten soil-water retention equation with default water retention parameters appropriate for sand (USEPA 2004a). It is conservatively assumed that the building cracks are filled with sand. These parameters and the resulting soil-water profile in the vadose zone are shown in Attachment 2 of this appendix.

The remaining parameters in the equation for the attenuation coefficient α , which relate to building characteristics, are conservatively based on the default values for a slab-on-grade nonresidential building with an air exchange rate of 0.60 per hour as recommended by PADEP (2021). The values used in the calculations are shown in Attachment 2 of this appendix and their bases are discussed in PADEP (2021) and USEPA (2004a) guidance.

Mass Limit Check

Indoor air concentrations from the soil vapor intrusion are calculated with a mass balance check. The mass balance check ensures that the assumed mass of a constituent infiltrating into the building over the assumed exposure period does not exceed an upper-bound estimate of the constituent's mass in the vadose zone underlying the building. The upper-bound estimate of the constituent's mass in the vadose zone is conservatively estimated using the highest concentration of the constituent from any depth at



each area and assuming this concentration represents the soil concentration from slab to the water table. The attenuation coefficient α_{ML} used in the mass balance check is given by the following equation:

$$\alpha_{ML} = \left(\frac{\rho_b K_d}{H} + \frac{\theta_w}{H} + \theta_a \right) \cdot \left(\frac{L_B \cdot W_B \cdot \Delta H}{Q_{building} \cdot ED} \right)$$

where L_B is the length of the building, W_B is the width of the building, ΔH is the contaminant thickness (conservatively assumed to be the distance between groundwater and a building foundation [L_{T-gw}]), and $Q_{building}$ is the air flow rate through the building. The depth to groundwater in the area of the Site is approximately 19 ft bgs. All parameters are shown in Attachment 2 of this appendix.

$Q_{building}$ is a function of the size of the building (or unit) and the amount of air exchanges that occur as a result of operating the air handling and ventilation system. It can be calculated as follows (USEPA 2004a, 2017):

$$Q_{building} = L_B \cdot W_B \cdot H_B \cdot ER$$

where H_B is the occupied height of the building and ER is the air exchange rate.

For $Q_{building}$, the length (10 m), width (10 m), and height (2.44 m) of the generic nonresidential building are assumed, consistent with PADEP's recommended default assumptions for generic slab-on-grade nonresidential buildings (PADEP 2021). A conservative estimate of ER (i.e., 0.60/hr) was assumed based upon PADEP's (2021) recommended default for a generic nonresidential building.

The unit risk and unit HQ calculations are shown in Attachment 2 of this appendix, and the computation of the upper-bound site-related single-chemical cancer risk and noncancer HQ estimates, which are summed to estimate the media-specific cumulative cancer risk and noncancer HI, are shown in Attachment 8 of this appendix.

2.1.2.2 Groundwater

For the vapor intrusion inhalation exposure pathway, estimates of cancer risk and noncancer HQ/HI are calculated using unit risks and unit HQs as discussed above and in Section 5.3 of the Risk Assessment.

Modeling Vapor Intrusion from Groundwater

The chemical-specific cancer risk and noncancer HQ estimates for exposure to COPC via vapor intrusion from groundwater are calculated in a manner analogous to the approach discussed in Section 2.1.2.1, except for the calculation of source vapor concentration.

The source vapor concentration for a chemical in groundwater is calculated from the chemical's concentration in groundwater C_{gw} using Henry's law as follows:

$$C_{source} = C_{gw} \cdot H$$

In calculating the attenuation coefficient α , the depth to groundwater was assumed to be 19 ft bgs below the basement slab. The calculation of α is shown in Attachment 2 of this appendix.



The unit risk and unit HQ calculations are shown in Attachment 2 of this appendix, and the computation of the upper-bound site-related single-chemical cancer risk and noncancer HQ estimates, which are summed to estimate the media-specific cumulative cancer risk and noncancer HI, are shown in Attachment 8 of this appendix.

2.1.3 Volatilization to Outdoor Air

To evaluate potential exposure to COPC in outdoor vapors from shallow groundwater, risk estimates are developed using the following modeling approaches and input parameters discussed below.

2.1.3.1 Groundwater

The concentration (C_{air}) of groundwater chemicals that migrate through the vadose zone to outdoor air is calculated as follows:

$$C_{air} = J \cdot C/Q$$

where J is the vapor flux, and C/Q is the normalized, annual-average, air concentration at ground level (as discussed in Section 2.1.1).

The vapor flux J is calculated by using the steady-state diffusion equation in one-dimension with a constant source concentration and the maximum concentration gradient, as follows:

$$J = D_e \cdot \frac{C_v}{L}$$

where D_e is the effective diffusion coefficient of the chemical in the vapor phase, C_v is the vapor concentration in equilibrium with the groundwater concentration, and L is the distance from the water table to the ground surface. The equilibrium vapor concentration in the above equations is related to the groundwater concentration using Henry's law as discussed in Section 2.1.2.2.

The effective diffusion coefficient for the vapor phase is calculated in a manner analogous to the approach discussed in Section 2.1.2.2. The depth to water is assumed to be 19 ft bgs, the average depth to groundwater in Tank Group 04. The parameters used to calculate the effective diffusion coefficient are shown in Attachment 2 of this appendix.

The estimated outdoor air concentrations are used in the inhalation risk equations discussed in Section 2 to calculate single-chemical inhalation cancer risk and HQ. The unit risk and unit HQ calculations, and the computation of the upper-bound single-chemical cancer risk and HQ estimates, which were summed to estimate the cumulative cancer risk and HI, are shown in Attachment 8 of this appendix.

2.2 Maintenance Worker

Risk estimates for maintenance workers are calculated for potential exposures to soil and groundwater.



2.2.1 Exposure to Soil During Maintenance Activities

This human health risk assessment evaluates maintenance worker exposures to soil via incidental ingestion, soil contact, and inhalation during outdoor activities. The calculation of the risk estimates is analogous to those for routine workers except for (1) the use of soil exposure factors for maintenance workers and (2) the calculation of airborne vapor and dust concentrations which are described in this section.

The calculation of airborne vapor concentrations is analogous to those for routine workers except for the use of a shorter averaging period (T). For maintenance workers, an averaging period, T , of 10 years is used consistent with their exposure period. The calculation of J_v is shown in Attachment 3, Table 1.

As noted in Section 5.1.3.3 of the Risk Assessment, during maintenance activities the PM_{10} level is set at 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). This PM_{10} level is based on a time-weighted average assuming maintenance workers spend 1/3 of their exposure period excavating into the subsurface and 2/3 of their exposure period conducting maintenance activities that do not involve excavation into the subsurface. In calculating the time-weighted average, the 24-hour average National Ambient Air Quality Standards for PM_{10} of $150 \mu\text{g}/\text{m}^3$ is used as the PM_{10} concentration during excavations and a PM_{10} concentration of $1 \mu\text{g}/\text{m}^3$ is used for the time during maintenance activities that do not involve excavation. The PM_{10} concentration during non-excavation maintenance activities is expected to be less than $1 \mu\text{g}/\text{m}^3$, based on the wind erosion model recommended by USEPA (1996a) using site-specific wind speed from Philadelphia, Pennsylvania (NOAA 2018).

Attachment 3, Table 3 presents the air concentrations estimated for particulates and vapors.

The unit risk and unit HQ calculations are shown in Attachment 3. The upper-bound site-related single-chemical cancer risk and noncancer HQ estimates, which are summed to estimate the media-specific cumulative cancer risk and noncancer HI, are shown in Attachment 8.

2.2.2 Exposure to Groundwater During Maintenance Activities

As discussed in Section 5.1.1 of the Risk Assessment, maintenance workers could be exposed to groundwater via incidental ingestion, dermal contact, and inhalation of vapors during excavations that extend into the water table. The cancer risk and noncancer HQ estimates for the ingestion and dermal exposure routes are calculated in a manner analogous to the method discussed in Section 2.1.1, except the exposure factors for maintenance worker contact with groundwater are used, as presented in Section 5.1.4 of the Risk Assessment, and the $LADD$ and ADD for the dermal route of exposure and the vapor flux are calculated as discussed below.

Lifetime Average Daily Dose

The $LADD$ for groundwater ingestion ($LADD_{ing}$) and groundwater dermal contact ($LADD_{derm}$) were calculated as follows:

$$LADD_{ing} = C_{gw} \frac{IR \cdot EF \cdot ED}{BW \cdot AT_c}$$



$$LADD_{derm} = C_{gw} \frac{DA_{event} \cdot SA \cdot EV \cdot EF \cdot ED}{BW \cdot AT_c}$$

where C_{gw} is the chemical concentration in groundwater (assumed to be a unit concentration of 1 mg/L), IR is the groundwater ingestion rate, DA_{event} is the absorbed dose per event, SA is the exposed skin surface area, and EV is the event frequency.

The DA_{event} for organic chemicals is estimated using an unsteady-state approach (USEPA 2004b, Equations 3.2 and 3.3), which is more conservative than the steady-state approach (USEPA 1989), particularly for hydrophobic chemicals. The DA_{event} for inorganic chemicals is estimated using a steady-state approach (USEPA 2004b, Equation 3.4). The details of the calculation of DA_{event} for organic and inorganic chemicals are provided by USEPA (2004b) and not repeated here.

Average Daily Dose

Average daily dose (ADD) for groundwater ingestion (ADD_{ing}) and groundwater dermal contact (ADD_{derm}) were calculated as follows:

$$ADD_{ing} = C_{gw} \frac{IR \cdot EF \cdot ED}{BW \cdot AT_{nc}}$$

$$ADD_{derm} = C_{gw} \frac{DA_{event} \cdot SA \cdot EV \cdot EF \cdot ED}{BW \cdot AT_{nc}}$$

Unit Cancer Risk, Unit Noncancer HQ, and RBSL for Groundwater Ingestion and Dermal Exposure Routes

For the groundwater ingestion and dermal exposure routes, the unit cancer risk and unit noncancer HQ were calculated as follows:

$$Unit\ Risk = LADD \cdot SF$$

$$Unit\ HQ = \frac{ADD}{RfD}$$

The unit risk and unit HQ calculations for each COPC for the groundwater ingestion and dermal exposure routes are presented in Attachment 3. The exposure factors used for maintenance workers are presented in Section 5.1.4. of the Risk Assessment.

Estimating Air Concentrations

For the inhalation route, the air concentrations (C_{air}) resulting from the volatilization of COCs from groundwater in an excavation were calculated as follows:

$$C_{air} = J \cdot C / Q$$



Where $J \cdot C/Q$ is an air concentration that is normalized to unit concentration (i.e., 1 mg/L) in groundwater. The J term is the normalized average vapor and the C/Q term is the air concentration normalized to a unit flux (i.e., C/Q is an air dispersion factor).

The normalized vapor flux J of a chemical from groundwater was estimated using an overall mass transfer coefficient that is recommended by USEPA (1995b):

$$J = \left(\frac{1}{k_l} + \frac{1}{Hk_g} \right)^{-1} \left(\frac{m}{10^2 cm} \right) \left(\frac{10^3 L}{m^3} \right)$$

Where k_l and k_g are the liquid-phase and gas-phase mass transfer coefficients given by the following:

$$k_l = \left(\frac{MW_o}{MW} \right)^{0.5} \left(\frac{T}{298K} \right) k_{l,o}$$

$$k_g = \left(\frac{MW_w}{MW} \right)^{0.335} \left(\frac{T}{298K} \right)^{1.005} k_{g,w}$$

Where MW , MW_o , and MW_w are the molecular weights of the chemical, oxygen, and water, respectively, T is the absolute temperature of the groundwater, $k_{l,o}$ is the liquid-phase mass transfer coefficient for oxygen (0.002 centimeters per second), and $k_{g,w}$ is the gas-phase mass transfer coefficient for water vapor (0.833 centimeters per second).

For groundwater exposures during excavations to the water table, C/Q is based on a source area of a 15-by 15-foot excavation area, and an averaging period of 24 hours. The maximum 24-hour average air concentration is estimated from the annual average air concentration by using a conservative factor of 0.4/0.19 or 2.1 (USEPA 2002).

Unit Cancer Risk, Unit Noncancer HQ, and RBSL for Inhalation Route

For the inhalation route, the inhalation cancer unit risk and noncancer unit HQ are calculated using the chemical concentration in air (C_{air}), as follows:

$$Unit Risk_{inh} = C_{air} \cdot URF \cdot \frac{ET \cdot EF \cdot ED}{AT_c}$$

$$Unit HQ_{inh} = \frac{C_{air}}{RfC} \cdot \frac{ET \cdot EF \cdot ED}{AT_{nc}}$$

The unit risk and unit HQ calculations for each COPC for the inhalation route are presented in Attachment 3. The exposure factors used for maintenance workers are presented in Section 5.1.4. of the Risk Assessment. The computation of the upper-bound single-chemical cancer risk and noncancer HQ estimates, which are summed to estimate the cumulative cancer risk and noncancer HI, are shown in Attachment 8 of this appendix.



2.3 Construction Worker

Risk estimates for construction workers are calculated for potential exposures to soil and groundwater.

2.3.1 Exposure to Soil During Construction Activities

This human health risk assessment evaluates construction worker exposures via incidental ingestion, soil contact, and inhalation during outdoor activities. The calculation of the risk estimates is analogous to those for routine workers except for (1) the use of soil exposure factors for construction workers and (2) the calculation of airborne vapor and dust concentrations which are described in this section.

The calculation of airborne vapor concentrations is analogous to those for residents except for the use of a shorter averaging period (T). For construction workers, an averaging period, T , of 1 year is used consistent with their exposure period. The calculation of J_v is shown in Attachment 4, Table 1.

As noted in Section 5.1.3.3 of the Risk Assessment, during construction activities the PM_{10} level is set at $50 \mu\text{g}/\text{m}^3$, which is the former annual average National Ambient Air Quality Standards for PM_{10} since construction workers are assumed to be performing excavations for a work year. It is conservatively assumed that the PM_{10} concentration would be at this limit every day for the entire period of construction worker exposure.

Attachment 4, Table 3 presents the air concentrations estimated for particulates and vapors.

The unit risk and unit HQ calculations are shown in Attachment 4. The upper-bound site-related single-chemical cancer risk and noncancer HQ estimates, which are summed to estimate the media-specific cumulative cancer risk and noncancer HI, are shown in Attachment 8.

2.3.2 Exposure to Groundwater During Construction Activities

As discussed in Section 5.1.1 of the Risk Assessment, construction workers could be exposed to groundwater via incidental ingestion, dermal contact, and inhalation of vapors during excavations that extend into shallow groundwater. The computation of risk estimates for worker exposure to groundwater via incidental ingestion, dermal contact, and inhalation of vapors during construction activities is analogous to the computations discussed in Section 2.2.2 for maintenance workers, except the groundwater exposure factors for construction workers are used, as presented in Section 5.1.4. of the Risk Assessment, and subchronic noncancer toxicity values are used instead of chronic values since this exposure scenario represents a subchronic exposure.

The unit risk and unit HQ calculations are shown in Attachment 4. The upper-bound site-related single-chemical cancer risk and noncancer HQ estimates, which are summed to estimate the media-specific cumulative cancer risk and noncancer HI, are shown in Attachment 8.

2.4 Off-Site Resident

The chemical-specific cancer risk and noncancer HQ estimates for off-site resident exposure to COPC via inhalation of soil vapors and particulates and vapor intrusion from groundwater are calculated in a



manner analogous to the approach discussed in Section 2.1.1 and 2.1.2. The only differences are the use of exposure factors for off-site residents, as presented in Section 5.1.4. of the Risk Assessment.

The unit risk and unit HQ calculations for each COPC are presented in Attachment 5. The upper-bound site-related single-chemical cancer risk and noncancer HQ estimates, which are summed to estimate the media-specific cumulative cancer risk and noncancer HI, are shown in Attachment 8.

2.5 Soil Migration-to-Groundwater

Cancer and noncancer risk estimates were calculated by scaling off of the soil migration-to-groundwater RBSLs. RBSLs developed to conservatively evaluate the potential for COPC in soil to leach to groundwater at concentrations that may pose an unacceptable risk to human health or the environment are calculated using the methodologies described in the *Soil Screening Guidance: User's Guide* (USEPA 1996a).

RBSLs were calculated using both an “equilibrium partitioning” (also called soil/water partitioning [USEPA 1996a]) and a “leach test” methodology, as described below. For each COPC, the soil screening level corresponding to the more realistic of the two calculation methods is used as a soil migration-to-groundwater screening level. For COPC that are relatively immobile in the subsurface (e.g., semivolatile organic compounds), the equilibrium partitioning method provides a more realistic, yet conservative, soil leachate concentration because it assumes that the chemical concentration in soil remains constant over time (since the chemical is immobile, its concentration in soil does not significantly decrease over time). For chemicals that are relatively mobile (e.g., volatile organic compounds), the leach test method provides a more realistic, yet conservative, soil leachate concentration because it accounts for a finite amount of chemical mass in the soil. These two approaches of estimating soil leachate concentrations are conservative since they ignore attenuation of the chemical concentration in the vadose zone and dilution at the water table.

Equilibrium Partitioning

The soil/water partition equation, which assumes an infinite source of the chemical, can be used to estimate concentrations of chemicals in soil leachate for a given soil concentration.

$$C_{soil} = C_{pw} \left(K_d + \frac{\theta_w + \theta_a H}{\rho_b} \right)$$

In this relationship, C_{soil} is the soil concentration (mg/kg), C_{pw} is the soil leachate concentration (milligrams per liter [mg/L]), K_d is the chemical specific soil-water partition coefficient (liter per kilogram), θ_w is the water-filled soil porosity (unitless), θ_a is the air-filled soil porosity (unitless), H is the chemical-specific Henry's Law constant (unitless), and ρ_b is the dry soil bulk density (kilogram per liter [kg/L]). For organic chemicals, K_d is equal to the product of the chemical-specific soil organic carbon/water partition coefficient, K_{oc} (liter per kg), and the fraction organic carbon in soil, f_{oc} (unitless). For this analysis, the soil properties are based upon sand, the most conservative soil type identified at the Site. Specifically, θ_w is assumed to be 0.05 (liters per liter), θ_a is assumed to be 0.32 (liters per liter),



and ρ_b is assumed to be 1.66 kg/L (USEPA 2004a).¹ The f_{oc} is assumed to be 0.005 (grams per gram) (USEPA 1996a). The chemical-specific K_d , and K_{oc} , and H (and their sources) used are presented in Attachment 6.

Leach Test Method

USEPA's leach test method (SW-846, Method 1312)² can be simulated by assuming a hypothetical worst-case leach test outcome in which the entire mass of the chemical in soil is extracted into the leaching fluid. With this assumption, the concentration of the COPC in soil can be divided by 20 (which is the ratio of the mass of leaching fluid to the mass of soil in the leaching test protocol) to estimate its leachate concentration as follows:

$$C_{soil} = C_{pw} \times \frac{mr_{fluid:solid}}{\rho_{fluid}}$$

In the relationship above, C_{soil} is the soil concentration (mg/kg), C_{pw} is the soil leachate concentration (mg/L), $mr_{fluid:solid}$ (kilogram per kilogram) is the mass ratio of the extraction fluid to soil used in the leach test (i.e., 20 kg fluid per 1 kg soil), and ρ_{fluid} (kg/L) is the density of the extraction fluid (assumed to be 1 kg/L).

Dilution Attenuation Factor and Calculation of Soil Migration to Groundwater Screening Levels

As soil leachate moves through soil and groundwater, chemical concentrations are attenuated. The reduction in concentrations can be expressed by a dilution attenuation factor (DAF) defined as a ratio of soil leachate concentration to receptor point concentration (USEPA 1996a).

Rather than independently model leachate migration to calculate a site-specific DAF , a generic DAF of 20 was conservatively used in the development of the RBSLs. This default DAF is recommended by USEPA (1996a) for contaminated soil sources up to 0.5 acres.

To calculate soil migration to groundwater screening levels, the equations presented above can be further refined as follows:

$$C_{soil-SPLP} = C_{pw} \times \frac{mr_{fluid:solid}}{\rho_{fluid}} \times DAF$$

$$C_{soil-Kd} = C_{pw} \left(K_d + \frac{\theta_w + \theta_a H}{\rho_b} \right) \times DAF$$

By substituting target groundwater concentrations for C_{pw} in the leach test method and equilibrium-partitioning method equations, and assuming a DAF , two possible soil screening levels are calculated.

¹ Water-filled and air-filled porosity were estimated using the soil properties for sand (USEPA 2004) and the van Genuchten equation (van Genuchten 1980), assuming a depth to groundwater of 19 ft.

² Method 1312: Synthetic Precipitation Leaching Procedure, <https://www.epa.gov/sites/production/files/2015-12/documents/1312.pdf>.



The higher of the two estimated values was used as the RBSL as the higher represents the more realistic, yet conservative, soil screening level for this pathway.

Soil migration-to-groundwater RBSLs were calculated using the target groundwater concentrations based on groundwater RBSLs for the following scenarios:

- Routine worker exposure to COPC in groundwater via volatilization to outdoor air and vapor intrusion
- Construction worker exposure to COPC in groundwater via direct contact
- Off-site resident exposure to COPC in groundwater via vapor intrusion
- Receptor exposure to COPC in groundwater via nonpotable groundwater use

The acceptable groundwater concentrations are presented in Attachment 6. The soil migration-to-groundwater screening levels are presented in Appendix B of the Risk Assessment.

2.6 Nonpotable Groundwater Use

Potential exposures to COPC in groundwater via nonpotable groundwater use are evaluated using a hypothetical scenario where groundwater is used to fill a backyard wading pool (“kiddie” pool). This scenario represents a reasonable worst case exposure scenario in which the estimated exposure is expected to be higher than those associated with other nonpotable uses (e.g., watering lawns, washing cars). Potential routes of exposure in this scenario include incidental ingestion, dermal contact, and inhalation of vapors.

Estimates of cancer risk and noncancer HQ/HI are calculated using unit risks and unit HQs as discussed above and in Section 5.3 of the Risk Assessment and using the exposure factors as presented in Section 5.1.4. of the Risk Assessment.

Water Concentration in Kiddie Pool

The model for estimating vapor emission from a residential kiddie pool is based on models for estimating vapor emissions from open-top batch tanks (USEPA 1995a, 1995b). The residential kiddie pool is modeled as a 6-ft diameter tank that is 9 inches deep and is assumed to be filled with groundwater once per day. The concentration of volatile organic chemicals in the kiddie pool water decreases over time as the chemicals volatilize into the air. The average concentration over a period t is given by:

$$\bar{C}_w = C_{w,0} \frac{d}{K \cdot t} (1 - e^{-Kt/d})$$

where $C_{w,0}$ is the initial concentration, d is the depth of water in the pool and K is the chemical’s overall mass transfer coefficient (USEPA 1995b). K is calculated as follows:

$$K = \frac{k_l \cdot Hk_g}{k_l + Hk_g}$$



where H is the Henry's law constant, and k_l and k_g are the liquid-phase and gas-phase mass transfer coefficients given by the following equations (USEPA 1995a):

$$k_l = 10^{-6} + 144 \cdot 10^{-4} (0.01 u_{10} \sqrt{6.1 + 0.63 u_{10}})^{2.2} S_{C_l}^{-0.5}$$

$$k_g = 4.82 \cdot 10^{-3} u_{10}^{0.78} S_{C_g}^{-0.67} d_e^{-0.11}$$

where S_{C_l} and S_{C_g} are liquid-phase and gas-phase Schmidt numbers, d_e is the effective diameter of the water surface (m), and u_{10} is wind speed at 10 m above the water surface, which is 4.2 m/s based on the annual average wind speed in Philadelphia, Pennsylvania (NOAA 2018).

Air Concentration from Kiddie Pool

The concentration of the chemical in air at the water surface is given by the following:

$$C_{air} = \bar{C}_w \cdot K \cdot (C/Q)$$

The C/Q term is estimated using the empirical correlation in USEPA's *Supplemental Soil Screening Guidance* (2002), using the correlation coefficients for Philadelphia, Pennsylvania, and assuming a source area of a 6 by 6 foot kiddie pool. This air concentration is expected to be higher than actual air concentrations to which individuals would be exposed while in the kiddie pool.

Unit Cancer Risk, Unit Noncancer HQ, and RBSL

The unit risk and unit HQ calculations are shown in Attachment 7. The upper-bound site-related single-chemical cancer risk and noncancer HQ estimates for each sampling location, which are summed to estimate the media-specific cumulative cancer risk and noncancer HI, are shown in Attachment 8.

3 References

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Attachment 1

Toxicity Values and Physical and Chemical Properties

Table 1 – Toxicity Values

Table 2 – Physical and Chemical Properties



Attachment 2

Routine Worker Risk Calculations

Table 1 – Normalized Average Vapor Flux from Soil to Outdoor Air

Table 2 – Soil PM₁₀ Emission from Wind Erosion (Unlimited Reservoir Model)

Table 3 – Dispersion Factor to Outdoor Air

Table 4 – Concentrations in Outdoor Air from Soil

Table 5a – Unit Risk Calculations for Exposure of Routine Workers to Soil

Table 5b – Unit Hazard Quotient Calculations for Exposure of Routine Workers to Soil

Figure 1 – Soil Moisture Profile for Default PADEP Nonresidential Building (Slab-On-Grade)

Table 6 – Normalized Indoor Air Concentrations in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Soil

Table 7 – Unit Risk and Hazard Quotient Calculations for Soil Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Table 8 – Normalized Vapor Flux to Outdoor Air from Groundwater

Table 9 – Unit Risk and Hazard Quotient Calculations for Exposure of Routine Workers to Groundwater-derived Vapors in Outdoor Air

Table 10 – Normalized Indoor Air Concentrations in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Groundwater

Table 11 – Unit Risk and Hazard Quotient Calculations for Groundwater Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Table 12 – ProUCL Input

Table 13 – ProUCL Output



Attachment 3

Maintenance Worker Risk Calculations

Table 1 – Normalized Average Vapor Flux from Soil to Outdoor Air

Table 2 – Dispersion Factor to Outdoor Air

Table 3 – Concentrations in Outdoor Air from Soil

Table 4a – Unit Risk Calculations for Exposure of Maintenance Workers to Soil

Table 4b – Unit Hazard Quotient Calculations for Exposure of Maintenance Workers to Soil

Table 5 – Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Table 6 – Dermal Absorbed Dose for Groundwater

Table 7a – Unit Risk Calculations for Exposure of Maintenance Workers to Groundwater in Excavations

Table 7b – Unit Hazard Quotient Calculations for Exposure of Maintenance Workers to Groundwater in Excavations



Attachment 4

Construction Worker Risk Calculations

Table 1 – Normalized Average Vapor Flux from Soil to Outdoor Air

Table 2 – Dispersion Factor to Outdoor Air

Table 3 – Concentrations in Outdoor Air from Soil

Table 4a – Unit Risk Calculations for Exposure of Construction Workers to Soil

Table 4b – Unit Hazard Quotient Calculations for Exposure of Construction Workers to Soil

Table 5 – Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Table 6 – Dermal Absorbed Dose for Groundwater

Table 7a – Unit Risk Calculations for Exposure of Construction Workers to Groundwater in Excavations

Table 7b – Unit Hazard Quotient Calculations for Exposure of Construction Workers to Groundwater in Excavations



Attachment 5

Off-Site Resident Risk Calculations

Figure 1 – Soil Moisture Profile for Default PADEP Residential Building (w/ Basement)

Table 1 – Normalized Indoor Air Concentrations in a Default PADEP Residential Building (with Basement)
Due to Vapor Intrusion from Groundwater

Table 2 – Unit Risk and Hazard Quotient Calculations for Groundwater Vapor Intrusion into a Default
PADEP Residential Building (with Basement)



Attachment 6

Soil Migration to Groundwater Calculations

Table 1 – Groundwater Protection Concentrations

Table 2 – Soil Migration to Groundwater Criteria Based on the Nonpotable GW Use RBSL [Cancer]

Table 3 – Soil Migration to Groundwater Criteria Based on the Nonpotable GW Use RBSL [Noncancer]

Table 4 – Soil Migration to Groundwater Criteria Based on the RW GW Vol to Outdoor Air RBSL [Cancer]

Table 5 – Soil Migration to Groundwater Criteria Based on the RW GW Vol to Outdoor Air RBSL [Noncancer]

Table 6 – Soil Migration to Groundwater Criteria Based on the RW GW Vapor Intrusion RBSL [Cancer]

Table 7 – Soil Migration to Groundwater Criteria Based on the RW GW Vapor Intrusion RBSL [Noncancer]

Table 8 – Soil Migration to Groundwater Criteria Based on the Construction Worker Direct Contact RBSL [Cancer]

Table 9 – Soil Migration to Groundwater Criteria Based on the Construction Worker Direct Contact RBSL [Noncancer]

Table 10 – Soil Migration to Groundwater Criteria Based on the Off-Site Resident Vapor Intrusion RBSL [Cancer]

Table 11 – Soil Migration to Groundwater Criteria Based on the Off-Site Resident Vapor Intrusion RBSL [Noncancer]

Table 12 – Soil Migration to Groundwater Criteria Based on the GW MtSW RBSL



Attachment 7

Nonpotable Groundwater Use Calculations

Table 1 – Normalized Vapor Flux to Outdoor Air from Residential Kiddie Pool

Table 2 – Nonsteady State Dermal Absorption of Chemicals from Water in Residential Kiddie Pool

Table 3 – Dispersion Factor to Outdoor Air

Table 4a – Unit Risk Calculations for Exposure of Resident to Groundwater in Kiddie Pools

Table 4b – Unit Hazard Quotient Calculations for Exposure of Resident to Groundwater in Kiddie Pools



Attachment 8

Single-Chemical Risk Estimates

Table 1 – Upper-Bound Single-Chemical Cancer Risk and Noncancer HQ for Soil

Table 2 – Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil

Table 3 – Upper-Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Groundwater

Table 4 – Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Groundwater



Attachment 1

Toxicity Values and Physical and Chemical Properties

Table 1 – Toxicity Values

Table 2 – Physical and Chemical Properties



Attachment 1

Table 1

Toxicity Values

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Classification			SF _{oral} (mg/kg/d) ⁻¹			SF _{dermal} (mg/kg/d) ⁻¹			URF (mg/m ³) ⁻¹			RfD _{oral} (mg/kg/d)				RfD _{dermal} (mg/kg/d)				RfC (mg/m ³)				SRfD _{oral} (mg/kg/d)				SRfD _{dermal} (mg/kg/d)				SRfC (mg/m ³)			
			Group	Ref	Note	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	UF	Ref	Notes	Value	UF	Ref	Notes	Value	UF	Ref	Notes	Value	UF	Ref	Notes	Value	UF	Ref	Notes	Value	UF	Ref	Notes
VOC	Benzene	71-43-2	A	1		5.5E-02	1	68	5.5E-02	125	104	7.8E-03	1	60	4.0E-03	300	1		4.0E-03	300	125	104	3.0E-02	300	1		1.0E-02	100	126		1.0E-02	100	125	104	9.0E-02	100	1	110
VOC	Cumene	98-82-8	D	1											1.0E-01	1,000	1		1.0E-01	1,000	125	104	4.0E-01	1,000	1		4.0E-01	300	2		4.0E-01	300	125	104	4.0E-01	1,000	1	62
VOC	1,2-Dibromoethane	106-93-4	LC	1		2.0E+00	1		2.0E+00	125	104	6.0E-01	1		9.0E-03	3,000	1		9.0E-03	3,000	125	104	9.0E-03	300	1		9.0E-03	3,000	1	62	9.0E-03	3000	125	104	9.0E-03	300	1	62
VOC	1,2-Dichloroethane	107-06-2	B2	1		9.1E-02	1		9.1E-02	125	104	2.6E-02	1		2.0E-02	3,000	126	116	2.0E-02	3,000	125	104	7.0E-03	3,000	126		2.0E-02	3,000	126		2.0E-02	3000	125	104	7.0E-02	300	126	
VOC	Ethyl Benzene	100-41-4	D	1											1.0E-01	1,000	1		1.0E-01	1,000	125	104	1.0E+00	300	1		1.0E-01	1,000	1	62	1.0E-01	1000	125	104	9.0E+00	100	126	
VOC	Methyl tert-butyl ether	1634-04-4	C	142		1.8E-03	147		1.8E-03	125	104	2.6E-04	147		3.0E-01	300	129	111, 116	3.0E-01	300	125	104	3.0E+00	100	1		3.0E-01	300	129	111	3.0E-01	300	125	104	3.0E+00	100	1	62
VOC	Toluene	108-88-3	ID	1											8.0E-02	3,000	1		8.0E-02	3,000	125	104	5.0E+00	10	1		8.0E-01	300	1	110	8.0E-01	300	125	104	5.0E+00	10	126	
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1											1.0E-02	300	1		1.0E-02	300	125	104	6.0E-02	300	1		4.0E-02	100	1		4.0E-02	100	125	104	2.0E-01	100	1	
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1											1.0E-02	300	1		1.0E-02	300	125	104	6.0E-02	300	1		4.0E-02	100	1		4.0E-02	100	125	104	2.0E-01	100	1	
VOC	Xylenes (total)	1330-20-7	ID	1											2.0E-01	1,000	1		2.0E-01	1,000	125	104	1.0E-01	300	1		2.0E-01	1,000	1	110	2.0E-01	1000	125	104	3.0E-01	100	1	110
SVOC	Anthracene	120-12-7	ID	1											3.0E-01	3,000	1		3.0E-01	3,000	125	104			2	90	1.0E+00	1,000	126		1.0E+00	1000	125	104			2	90, 62
SVOC	Benzo(a)anthracene	56-55-3	B2	1		1.0E-01	10	5, 159	1.0E-01	125	104	6.0E-02	10	5, 159			126	90			125	104				126	90				126	90			126	90		
SVOC	Benzo(a)pyrene	50-32-8	HC	1		1.0E+00	1	159	1.0E+00	125	104	6.0E-01	1	159	3.0E-04	300	1		3.0E-04	300	125	104	2.0E-06	3,000	1		3.0E-04	300	1	62	3.0E-04	300	125	104	2.0E-06	3,000	1	62
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1		1.0E-01	10	5, 159	1.0E-01	125	104	6.0E-02	10	5, 159																								
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1											3.0E-02	3,000	1	20	3.0E-02	3,000	125	104																
SVOC	Chrysene	218-01-9	B2	1		1.0E-03	10	5, 159	1.0E-03	125	104	6.0E-04	10	5, 159																								
SVOC	Ethanol	64-17-5													6.2E+01		910		6.2E+01		125	104	1.9E+01		910		6.2E+01		910		6.2E+01		125	104	1.9E+01		910	
SVOC	Fluorene	86-73-7	D	1											4.0E-02	3,000	1		4.0E-02	3,000	125	104					4.0E-01	300	129	111	4.0E-01	300	125	104				
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1		1.0E-01	10	5, 159	1.0E-01	125	104	6.0E-02	10	5, 159																								
SVOC	Naphthalene	91-20-3	C	1		1.2E-01	147		1.2E-01	125	104	3.4E-02	147		2.0E-02	3,000	1		2.0E-02	3,000	125	104	3.0E-03	3,000	1		2.0E-01	300	1	110	2.0E-01	300	125	104	3.0E-03	3,000	1	62
SVOC	Phenanthrene	85-01-8	D	1											3.0E-02	3,000	1	20	3.0E-02	3,000	125	104					3.0E-01	300	126	20	3.0E-01	300	125	104				
SVOC	Pyrene	129-00-0	NC	126											3.0E-02	3,000	1		3.0E-02	3,000	125	104					3.0E-01	300	126		3.0E-01	300	125	104				
SVOC	Tetraethylene Glycol	112-60-7													2.0E+00	30	126	210	2.0E+00	30	125	104			126	90, 210	2.0E+00	30	126	210	2.0E+00	30	125	104			126	90, 210
INORG	Lead	7439-92-1	B2	1																																		

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Notes:

- Based on potency relative to Benzo(a)pyrene [CASRN 50-32-8], as described in the indicated reference.
- Terraphase used Pyrene [CASRN 129-00-0] value from the indicated reference as a surrogate.
- Terraphase used chronic value as a surrogate for the subchronic value.
- IRIS provides a range of 1.5E-2 to 5.5E-2 (mg/kg/d)-1 as the oral Slope Factor for Benzene.
- Inadequate data exist to derive a toxicity value, according to the indicated reference.
- Dermal toxicity value is extrapolated from oral toxicity value in accordance with the referenced USEPA guidance.
- The value is based on discussion in the indicated reference regarding the principal study USEPA used in extrapolating from subchronic to chronic.
- Value as published is an MRL in the indicated reference.
- Terraphase used subchronic value as a surrogate for the chronic value.
- Because the chemical has a mutagenic mode of action according to USEPA, the SF and URF are adjusted by the following age-dependent adjustment factors (ADAFs) before use: 10 for ages 0 to 2; 3 for ages 2 to 16; and 1 for ages 16 and older (USEPA 2005).
- Terraphase used Triethylene glycol [CASRN 112-27-6] value from the indicated reference as a surrogate.
This extract was prepared on 1/9/2023.

Attachment 1

Table 2

Physical and Chemical Properties

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	MW (g/mole)			K _{ow} (unitless)			K _{oc} (L/kg)			K _d (L/kg)			H (unitless)				D _{air} (m ² /d)			D _{water} (m ² /d)			K _p (cm/hr)			ABS _d (unitless)			FA (unitless)		
			Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Adjust	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes	Value	Ref	Notes
VOC	Benzene	71-43-2	7.8E+01	50.3		1.3E+02	44		5.8E+01	44	111				2.3E-01	1.7E-01	44		7.6E-01	44		8.5E-05	44		1.5E-02	44	115	0.0E+00	62		1.0E+00	62	
VOC	Cumene	98-82-8	1.2E+02	50.3		3.1E+03	69		7.1E+02	69	111				5.3E-01	3.3E-01	69		5.6E-01	69		6.1E-05	69			69	115	0.0E+00	62		1.0E+00	62	114
VOC	1,2-Dibromoethane	106-93-4	1.9E+02	50.3		4.0E+01	1		2.2E+01	1	111				2.7E-02	2.4E-02	50.3	123	3.7E-01	69		7.3E-05	69		1.6E-03	1	115	0.0E+00	62		1.0E+00	62	
VOC	1,2-Dichloroethane	107-06-2	9.9E+01	50.3		3.0E+01	44		1.7E+01	44	111				4.0E-02	2.9E-02	44		9.0E-01	44		8.6E-05	44		4.1E-03	44	115	0.0E+00	62		1.0E+00	62	
VOC	Ethyl Benzene	100-41-4	1.1E+02	50.3		1.4E+03	44		3.7E+02	44	111				3.2E-01	2.2E-01	44		6.5E-01	44		6.7E-05	44		4.8E-02	44	115	0.0E+00	62		1.0E+00	62	
VOC	Methyl tert-butyl ether	1634-04-4	8.8E+01	1		1.7E+01	39		1.1E+01	39	111				2.4E-02	1.8E-02	69		7.4E-01	69		8.7E-05	69		3.3E-03	39	115	0.0E+00	62		1.0E+00	62	114
VOC	Toluene	108-88-3	9.2E+01	50.3		5.6E+02	44		2.7E+01	44	111				2.7E-01	1.9E-01	44		7.5E-01	44		7.4E-05	44		3.2E-02	44	115	0.0E+00	62		1.0E+00	62	
VOC	1,2,4-Trimethylbenzene	95-63-6	1.2E+02	46		4.3E+03	69		9.0E+02	69	111				2.5E-01	1.6E-01	69		5.2E-01	69		6.8E-05	69			69	115	0.0E+00	62		1.0E+00	62	
VOC	1,3,5-Trimethylbenzene	108-67-8	1.2E+02	39		1.0E+04	69		1.8E+03	69	111				2.4E-01	1.5E-01	69		5.2E-01	69		7.5E-05	69			69	115	0.0E+00	62		1.0E+00	62	
VOC	Xylenes (total)	1330-20-7	1.1E+02	50.3		1.5E+03	44		3.9E+02	44	111				2.8E-01	2.5E-01	44		6.7E-01	44		7.6E-05	44		5.0E-02	44	115	0.0E+00	62		1.0E+00	62	114
SVOC	Anthracene	120-12-7	1.8E+02	50.3		3.5E+04	44		3.0E+04	44	82				2.7E-03	1.3E-03	44		2.8E-01	44		6.7E-05	44			44	115	1.3E-01	62		1.0E+00	62	117
SVOC	Benzo(a)anthracene	56-55-3	2.3E+02	50.3		5.0E+05	44		4.0E+05	44	82				1.4E-04	5.6E-05	44		4.4E-01	44		7.8E-05	44			44	115	1.3E-01	62		9.0E-01	62	117
SVOC	Benzo(a)pyrene	50-32-8	2.5E+02	50.3		1.3E+06	44		1.0E+06	44	82				4.6E-05	1.5E-05	44		3.7E-01	44		7.8E-05	44			44	115	1.3E-01	62		8.0E-01	62	117
SVOC	Benzo(b)fluoranthene	205-99-2	2.5E+02	50.1		1.6E+06	44		1.2E+06	44	82				4.6E-03	1.7E-03	44		2.0E-01	44		4.8E-05	44			44	115	1.3E-01	62		8.0E-01	62	117
SVOC	Benzo(g,h,i)perylene	191-24-2	2.8E+02	50.3		1.7E+07	69		1.3E+07	69	82				1.4E-05	1.1E-05	50.3	123	1.9E-01	69		4.5E-05	69			69	115	1.3E-01	62		7.0E-01	62	117
SVOC	Chrysene	218-01-9	2.3E+02	50.3		5.0E+05	44		4.0E+05	44	82				3.9E-03	1.5E-03	44		2.1E-01	44		5.4E-05	44			44	115	1.3E-01	62		9.0E-01	62	117
SVOC	Ethanol	64-17-5	4.6E+01	62		4.9E-01	62		6.8E-01	62	111				2.2E-04	1.7E-04	69		1.1E+00	69		1.1E-04	69		5.5E-04	62	115	0.0E+00	62		1.0E+00	62	
SVOC	Fluorene	86-73-7	1.7E+02	50.3		1.6E+04	44		1.4E+04	44	82				2.6E-03	1.4E-03	44		3.1E-01	44		6.8E-05	44			44	115	1.3E-01	62		1.0E+00	62	117
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.8E+02	50.3		4.5E+06	44		3.0E+06	44	82				6.6E-05	2.0E-05	44		1.6E-01	44		4.9E-05	44			44	115	1.3E-01	62		7.0E-01	62	117
SVOC	Naphthalene	91-20-3	1.3E+02	50.3		2.3E+03	44		2.0E+03	44	82				2.0E-02	1.2E-02	44		5.1E-01	44		6.5E-05	44			44	115	1.3E-01	62		1.0E+00	62	
SVOC	Phenanthrene	85-01-8	1.8E+02	50.3		2.9E+04	69		2.4E+04	69	82				1.7E-03	1.4E-03	50.3	123	3.2E-01	69		6.5E-05	69			69	115	1.3E-01	62		1.0E+00	62	117
SVOC	Pyrene	129-00-0	2.0E+02	50.3		1.3E+05	44		1.1E+05	44	82				4.5E-04	2.0E-04	44		2.4E-01	44		6.3E-05	44			44	115	1.3E-01	62		1.0E+00	62	117
SVOC	Tetraethylene Glycol	112-60-7	1.9E+02	69		2.8E-02	78		3.0E-02	78	82				2.0E-11	1.6E-11	69		4.4E-01	69	125	7.0E-05	69	125		78	115	1.0E-01	62		1.0E+00	62	114
INORG	Lead	7439-92-1	2.1E+02	50.3								9.0E+02	35							40	48		40	48		1.0E-04	62		0.0E+00	62			

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- 69 USEPA. 2004. WATER9. Version 2.0.0. Office of Air Quality Planning and Standards. July.
- 78 USEPA. 2022. COMPTox Chemicals Dashboard. September 28.

Notes:

- 48 Not Available or Not Applicable
- 82 Used Equation (70) from Reference 44 to calculate Koc value using Log Kow value from indicated reference.
- 111 Used Equation (71) from Reference 44 to calculate Koc value using Log Kow value from indicated reference.
- 114 A value of 1 is conservatively used because EPA guidance does not provide a default value.
- 115 Calculated Kp value using equation 3.8 (p.3-7) in reference 62 with log Kow from the indicated reference and the MW presented in table.
- 117 Derived the FA based on Exhibit A-4 in the indicated reference.
- 123 Value has been assigned a default reference temperature.
- 125 Used Triethylene glycol [CASRN 112-27-6] value from the indicated reference as a surrogate.

Attachment 2

Routine Worker Risk Calculations

Table 1 – Normalized Average Vapor Flux from Soil to Outdoor Air

Table 2 – Soil PM₁₀ Emission from Wind Erosion (Unlimited Reservoir Model)

Table 3 – Dispersion Factor to Outdoor Air

Table 4 – Concentrations in Outdoor Air from Soil

Table 5a – Unit Risk Calculations for Exposure of Routine Workers to Soil

Table 5b – Unit Hazard Quotient Calculations for Exposure of Routine Workers to Soil

Figure 1 – Soil Moisture Profile for Default PADEP Nonresidential Building (Slab-On-Grade)

Table 6 – Normalized Indoor Air Concentrations in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Soil

Table 7 – Unit Risk and Hazard Quotient Calculations for Soil Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Table 8 – Normalized Vapor Flux to Outdoor Air from Groundwater

Table 9 – Unit Risk and Hazard Quotient Calculations for Exposure of Routine Workers to Groundwater-derived Vapors in Outdoor Air

Table 10 – Normalized Indoor Air Concentrations in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Groundwater

Table 11 – Unit Risk and Hazard Quotient Calculations for Groundwater Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Table 12 – ProUCL Input

Table 13 – ProUCL Output



Attachment 2

Table 1

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	D _{air} (m ² /d)	D _{water} (m ² /d)	D _G (m ² /d)	D _L (m ² /d)	D _E (m ² /d)	J _v (kg/m ² -s)
VOC	Benzene	71-43-2	5.82E+01		1.68E-01	7.60E-01	8.47E-05	1.23E-01	3.46E-08	3.51E-02	1.11E-05
VOC	Cumene	98-82-8	7.05E+02		3.28E-01	5.62E-01	6.13E-05	9.10E-02	2.51E-08	4.96E-03	9.32E-06
VOC	1,2-Dibromoethane	106-93-4	2.22E+01		2.37E-02	3.72E-01	7.29E-05	6.02E-02	2.98E-08	5.83E-03	9.53E-06
VOC	1,2-Dichloroethane	107-06-2	1.75E+01		2.92E-02	8.99E-01	8.55E-05	1.46E-01	3.50E-08	2.04E-02	1.07E-05
VOC	Ethyl Benzene	100-41-4	3.67E+02		2.20E-01	6.48E-01	6.74E-05	1.05E-01	2.76E-08	7.27E-03	9.80E-06
VOC	Methyl tert-butyl ether	1634-04-4	1.15E+01		1.83E-02	7.42E-01	8.73E-05	1.20E-01	3.57E-08	1.43E-02	1.05E-05
VOC	Toluene	108-88-3	1.80E+02		1.93E-01	7.52E-01	7.43E-05	1.22E-01	3.04E-08	1.46E-02	1.05E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	8.97E+02		1.61E-01	5.24E-01	6.84E-05	8.48E-02	2.80E-08	1.81E-03	7.67E-06
VOC	1,3,5-Trimethylbenzene	108-67-8	1.76E+03		1.54E-01	5.20E-01	7.49E-05	8.42E-02	3.06E-08	8.81E-04	6.17E-06
VOC	Xylenes (total)	1330-20-7	3.86E+02		2.52E-01	6.74E-01	7.56E-05	1.09E-01	3.09E-08	8.23E-03	9.94E-06
SVOC	Anthracene	120-12-7	2.97E+04		1.30E-03	2.80E-01	6.69E-05	4.53E-02	2.74E-08	2.40E-07	1.11E-07
SVOC	Benzo(a)anthracene	56-55-3	4.01E+05		5.55E-05	4.41E-01	7.78E-05	7.14E-02	3.18E-08	1.20E-09	
SVOC	Benzo(a)pyrene	50-32-8	1.01E+06		1.49E-05	3.72E-01	7.78E-05	6.02E-02	3.18E-08	1.11E-10	
SVOC	Benzo(b)fluoranthene	205-99-2	1.24E+06		1.66E-03	1.95E-01	4.80E-05	3.16E-02	1.97E-08	5.08E-09	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.28E+07		1.10E-05	1.88E-01	4.54E-05	3.04E-02	1.86E-08	3.32E-12	
SVOC	Chrysene	218-01-9	4.01E+05		1.48E-03	2.14E-01	5.37E-05	3.47E-02	2.20E-08	1.54E-08	
SVOC	Ethanol	64-17-5	6.81E-01		1.75E-04	1.06E+00	1.12E-04	1.72E-01	4.60E-08	5.09E-04	
SVOC	Fluorene	86-73-7	1.38E+04		1.39E-03	3.14E-01	6.81E-05	5.08E-02	2.79E-08	6.17E-07	1.78E-07
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.45E+06		2.03E-05	1.64E-01	4.89E-05	2.66E-02	2.00E-08	1.96E-11	
SVOC	Naphthalene	91-20-3	2.01E+03		1.20E-02	5.10E-01	6.48E-05	8.26E-02	2.65E-08	5.94E-05	1.75E-06
SVOC	Phenanthrene	85-01-8	2.42E+04		1.41E-03	3.24E-01	6.45E-05	5.25E-02	2.64E-08	3.67E-07	1.37E-07
SVOC	Pyrene	129-00-0	1.06E+05		2.00E-04	2.35E-01	6.26E-05	3.81E-02	2.56E-08	8.73E-09	
SVOC	Tetraethylene Glycol	112-60-7	3.00E-02		1.62E-11	4.39E-01	6.96E-05	7.11E-02	2.85E-08	5.30E-07	
INORG	Lead	7439-92-1		9.00E+02							

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Table 1

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

Soil bulk density	kg/L	ρ_b	1.66
Soil porosity	L/L-soil	θ	0.38
Soil water content	L/L-soil	θ_w	0.05
Soil air-filled porosity	L/L-soil	θ_a	0.32
Soil organic carbon fraction	unitless	f_{oc}	0.005
Averaging period (Exposure Duration)	years	T	25
	days	T	9125
Temperature	$^{\circ}\text{C}$	Temp	18
Clean soil above source	m	Z_1	
Bottom of source depth	m	Z_2	5.79

Based on the volatilization model developed by Jury et. al. (1983) for finite sources as described in USEPA's (1996) Soil Screening Guidance: Technical Background Document. The K_d for organic compounds is the K_{oc} times the f_{oc} .

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Table 2

Soil PM₁₀ Emission from Wind Erosion

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Unlimited Reservoir Model

Parameter	Units	Variable	Value
Aerodynamic particle size multiplier			0.036
Ground cover fraction		G	0.5
Mode of aggregate size distribution	mm		0.50
Threshold friction velocity	m/s	u'_t	0.50
Correction factor			1.25
Corrected friction velocity	m/s	u*_t	0.6252
Roughness height	m	z₀	0.005
Anemometer height	m		8.0
Friction velocity at anemometer height	m/s	u_t	11.53
Mean annual wind speed	mph	u_m	9.3
Mean annual wind speed	m/s	u_m	4.16
u_m/u_t			0.361
$x = 0.886 u_t/u_m$			2.46
F(x)			0.064
Annual average PM₁₀ flux	kg-soil/m²-s	J_{10,w}	1.5E-11

Model described in more detail in USEPA's (1996) *Soil Screening Guidance: Technical Background Document* .

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Table 3

Dispersion Factor to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Parameter	Units	Value
Correlation coefficient city		Philadelphia
Correlation coefficient A		14.0111
Correlation coefficient B		19.6154
Correlation coefficient C		225.3397

Soil source area	acres	70.6
		Annual
Soil C/Q averaging time		Max
Conversion factor from 1-Hr Max for soil		0.19
C/Q for soil	(kg/m³)/(kg/m²-s)	25.06

Groundwater source area	acres	70.6000
		Annual
Groundwater averaging time for C/Q		Max
Conversion factor from 1-Hr Max for groundwater		0.19
C/Q for Groundwater	(L/m³)/(L/m²-s)	25.06

Note:

C/Q is estimated using the empirical correlation in USEPA's (2002) Supplemental Soil Screening Guidance.

Attachment 2

Table 4

Concentrations in Outdoor Air from Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Chem	Chemical	CASRN	Vapor		PM ₁₀	
			C _{soil} (mg/kg)	C _{air} (mg/m ³)	C _{soil} (mg/kg)	C _{air} (mg/m ³)
			C/Q (kg/m ³ per kg/m ² -s): 2.5E+01			
VOC	Benzene	71-43-2	1.00E+00	2.78E-04	1.00E+00	3.73E-10
VOC	Cumene	98-82-8	1.00E+00	2.34E-04	1.00E+00	3.73E-10
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	2.39E-04	1.00E+00	3.73E-10
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	2.69E-04	1.00E+00	3.73E-10
VOC	Ethyl Benzene	100-41-4	1.00E+00	2.46E-04	1.00E+00	3.73E-10
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	2.62E-04	1.00E+00	3.73E-10
VOC	Toluene	108-88-3	1.00E+00	2.63E-04	1.00E+00	3.73E-10
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	1.92E-04	1.00E+00	3.73E-10
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	1.55E-04	1.00E+00	3.73E-10
VOC	Xylenes (total)	1330-20-7	1.00E+00	2.49E-04	1.00E+00	3.73E-10
SVOC	Anthracene	120-12-7	1.00E+00	2.78E-06	1.00E+00	3.73E-10
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		1.00E+00	3.73E-10
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		1.00E+00	3.73E-10
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		1.00E+00	3.73E-10
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		1.00E+00	3.73E-10
SVOC	Chrysene	218-01-9	1.00E+00		1.00E+00	3.73E-10
SVOC	Ethanol	64-17-5	1.00E+00		1.00E+00	3.73E-10
SVOC	Fluorene	86-73-7	1.00E+00	4.47E-06	1.00E+00	3.73E-10
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		1.00E+00	3.73E-10
SVOC	Naphthalene	91-20-3	1.00E+00	4.38E-05	1.00E+00	3.73E-10
SVOC	Phenanthrene	85-01-8	1.00E+00	3.44E-06	1.00E+00	3.73E-10
SVOC	Pyrene	129-00-0	1.00E+00		1.00E+00	3.73E-10
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		1.00E+00	3.73E-10
INORG	Lead	7439-92-1	1.00E+00		1.00E+00	3.73E-10

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Table 5a

Unit Risk Calculations for Exposure of Routine Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	C _{soil} (mg/kg)	Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes	
					RBA	LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	Risk	ABS _{derm}	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	Risk	C _{air} (mg/m ³)	URF (m ³ /mg)	Risk	C _{air} (mg/m ³)	URF (mg/m ³) ⁻¹	Risk	Risk	
VOC	Benzene	71-43-2	A	1.00E+00		1.10E-07	5.5E-02	6.1E-09			5.5E-02			2.78E-04	7.8E-03	1.3E-07	3.73E-10	7.8E-03	1.7E-13	1.3E-07
VOC	Cumene	98-82-8	D	1.00E+00		1.10E-07								2.34E-04			3.73E-10			
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00		1.10E-07	2.0E+00	2.2E-07			2.0E+00			2.39E-04	6.0E-01	8.4E-06	3.73E-10	6.0E-01	1.3E-11	8.6E-06
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00		1.10E-07	9.1E-02	1.0E-08			9.1E-02			2.69E-04	2.6E-02	4.1E-07	3.73E-10	2.6E-02	5.7E-13	4.2E-07
VOC	Ethyl Benzene	100-41-4	D	1.00E+00		1.10E-07								2.46E-04			3.73E-10			
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00		1.10E-07	1.8E-03	2.0E-10			1.8E-03			2.62E-04	2.6E-04	4.0E-09	3.73E-10	2.6E-04	5.7E-15	4.2E-09
VOC	Toluene	108-88-3	ID	1.00E+00		1.10E-07								2.63E-04			3.73E-10			
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00		1.10E-07								1.92E-04			3.73E-10			
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00		1.10E-07								1.55E-04			3.73E-10			
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00		1.10E-07								2.49E-04			3.73E-10			
SVOC	Anthracene	120-12-7	ID	1.00E+00		1.10E-07			1.30E-01	1.21E-07				2.78E-06			3.73E-10			
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		1.10E-07	1.0E-01	1.1E-08	1.30E-01	1.21E-07	1.0E-01	1.2E-08		6.0E-02			3.73E-10	6.0E-02	1.3E-12	2.3E-08
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		1.10E-07	1.0E+00	1.1E-07	1.30E-01	1.21E-07	1.0E+00	1.2E-07		6.0E-01			3.73E-10	6.0E-01	1.3E-11	2.3E-07
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		1.10E-07	1.0E-01	1.1E-08	1.30E-01	1.21E-07	1.0E-01	1.2E-08		6.0E-02			3.73E-10	6.0E-02	1.3E-12	2.3E-08
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00		1.10E-07			1.30E-01	1.21E-07							3.73E-10			
SVOC	Chrysene	218-01-9	B2	1.00E+00		1.10E-07	1.0E-03	1.1E-10	1.30E-01	1.21E-07	1.0E-03	1.2E-10		6.0E-04			3.73E-10	6.0E-04	1.3E-14	2.3E-10
SVOC	Ethanol	64-17-5		1.00E+00		1.10E-07											3.73E-10			
SVOC	Fluorene	86-73-7	D	1.00E+00		1.10E-07			1.30E-01	1.21E-07			4.47E-06				3.73E-10			
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		1.10E-07	1.0E-01	1.1E-08	1.30E-01	1.21E-07	1.0E-01	1.2E-08		6.0E-02			3.73E-10	6.0E-02	1.3E-12	2.3E-08
SVOC	Naphthalene	91-20-3	C	1.00E+00		1.10E-07	1.2E-01	1.3E-08	1.30E-01	1.21E-07	1.2E-01	1.5E-08	4.38E-05	3.4E-02	8.7E-08		3.73E-10	3.4E-02	7.5E-13	1.2E-07
SVOC	Phenanthrene	85-01-8	D	1.00E+00		1.10E-07			1.30E-01	1.21E-07			3.44E-06				3.73E-10			
SVOC	Pyrene	129-00-0	NC	1.00E+00		1.10E-07			1.30E-01	1.21E-07							3.73E-10			
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00		1.10E-07			1.00E-01	9.32E-08							3.73E-10			
INORG	Lead	7439-92-1	B2	1.00E+00		1.10E-07											3.73E-10			

Attachment 2

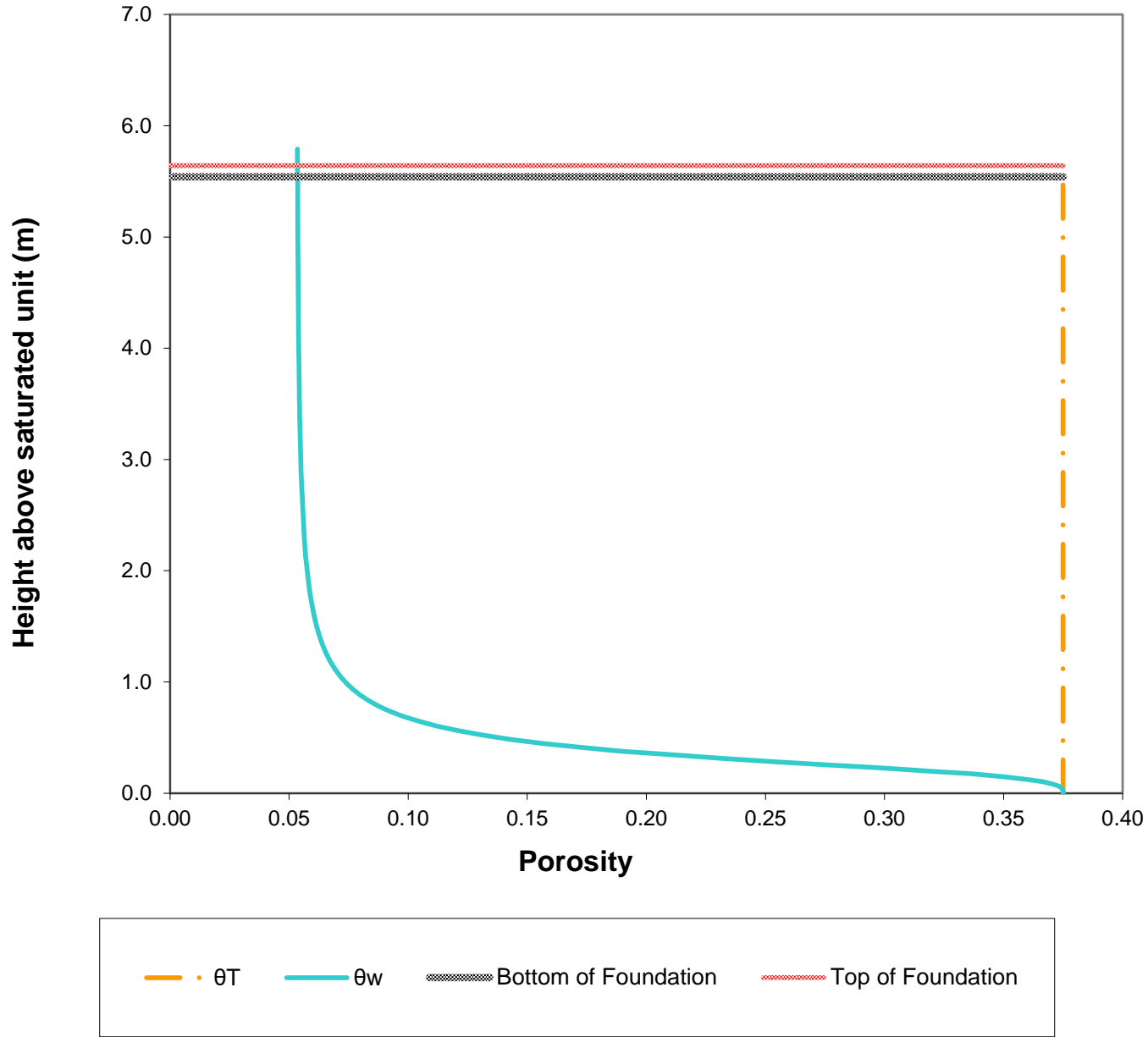
Table 5b

Unit Hazard Quotient Calculations for Exposure of Routine Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{soil} (mg/kg)	Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes	
				RBA	ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	ABS _{derm}	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	HQ	
VOC	Benzene	71-43-2	1.00E+00		3.08E-07	4.0E-03	7.7E-05			4.0E-03			2.78E-04	3.0E-02	1.5E-03	3.73E-10	3.0E-02	2.0E-09	1.6E-03
VOC	Cumene	98-82-8	1.00E+00		3.08E-07	1.0E-01	3.1E-06			1.0E-01			2.34E-04	4.0E-01	9.6E-05	3.73E-10	4.0E-01	1.5E-10	9.9E-05
VOC	1,2-Dibromoethane	106-93-4	1.00E+00		3.08E-07	9.0E-03	3.4E-05			9.0E-03			2.39E-04	9.0E-03	4.4E-03	3.73E-10	9.0E-03	6.8E-09	4.4E-03
VOC	1,2-Dichloroethane	107-06-2	1.00E+00		3.08E-07	2.0E-02	1.5E-05			2.0E-02			2.69E-04	7.0E-03	6.3E-03	3.73E-10	7.0E-03	8.8E-09	6.3E-03
VOC	Ethyl Benzene	100-41-4	1.00E+00		3.08E-07	1.0E-01	3.1E-06			1.0E-01			2.46E-04	1.0E+00	4.0E-05	3.73E-10	1.0E+00	6.1E-11	4.3E-05
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00		3.08E-07	3.0E-01	1.0E-06			3.0E-01			2.62E-04	3.0E+00	1.4E-05	3.73E-10	3.0E+00	2.0E-11	1.5E-05
VOC	Toluene	108-88-3	1.00E+00		3.08E-07	8.0E-02	3.9E-06			8.0E-02			2.63E-04	5.0E+00	8.6E-06	3.73E-10	5.0E+00	1.2E-11	1.2E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00		3.08E-07	1.0E-02	3.1E-05			1.0E-02			1.92E-04	6.0E-02	5.3E-04	3.73E-10	6.0E-02	1.0E-09	5.6E-04
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00		3.08E-07	1.0E-02	3.1E-05			1.0E-02			1.55E-04	6.0E-02	4.2E-04	3.73E-10	6.0E-02	1.0E-09	4.5E-04
VOC	Xylenes (total)	1330-20-7	1.00E+00		3.08E-07	2.0E-01	1.5E-06			2.0E-01			2.49E-04	1.0E-01	4.1E-04	3.73E-10	1.0E-01	6.1E-10	4.1E-04
SVOC	Anthracene	120-12-7	1.00E+00		3.08E-07	3.0E-01	1.0E-06	1.30E-01	3.39E-07	3.0E-01	1.1E-06		2.78E-06			3.73E-10			2.2E-06
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		3.08E-07			1.30E-01	3.39E-07							3.73E-10			
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		3.08E-07	3.0E-04	1.0E-03	1.30E-01	3.39E-07	3.0E-04	1.1E-03			2.0E-06		3.73E-10	2.0E-06	3.1E-05	2.2E-03
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		3.08E-07			1.30E-01	3.39E-07							3.73E-10			
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		3.08E-07	3.0E-02	1.0E-05	1.30E-01	3.39E-07	3.0E-02	1.1E-05					3.73E-10			2.2E-05
SVOC	Chrysene	218-01-9	1.00E+00		3.08E-07			1.30E-01	3.39E-07							3.73E-10			
SVOC	Ethanol	64-17-5	1.00E+00		3.08E-07	6.2E+01	5.0E-09			6.2E+01				1.9E+01		3.73E-10	1.9E+01	3.2E-12	5.0E-09
SVOC	Fluorene	86-73-7	1.00E+00		3.08E-07	4.0E-02	7.7E-06	1.30E-01	3.39E-07	4.0E-02	8.5E-06		4.47E-06			3.73E-10			1.6E-05
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		3.08E-07			1.30E-01	3.39E-07							3.73E-10			
SVOC	Naphthalene	91-20-3	1.00E+00		3.08E-07	2.0E-02	1.5E-05	1.30E-01	3.39E-07	2.0E-02	1.7E-05		4.38E-05	3.0E-03	2.4E-03	3.73E-10	3.0E-03	2.0E-08	2.4E-03
SVOC	Phenanthrene	85-01-8	1.00E+00		3.08E-07	3.0E-02	1.0E-05	1.30E-01	3.39E-07	3.0E-02	1.1E-05		3.44E-06			3.73E-10			2.2E-05
SVOC	Pyrene	129-00-0	1.00E+00		3.08E-07	3.0E-02	1.0E-05	1.30E-01	3.39E-07	3.0E-02	1.1E-05					3.73E-10			2.2E-05
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		3.08E-07	2.0E+00	1.5E-07	1.00E-01	2.61E-07	2.0E+00	1.3E-07					3.73E-10			2.8E-07
INORG	Lead	7439-92-1	1.00E+00		3.08E-07											3.73E-10			

Attachment 2
Figure 1: Soil Moisture Profile for Default PADEP Nonresidential Building (Slab-On-Grade)
PESRM Philadelphia Refining Complex, Philadelphia, Pennsylvania



Attachment 2

Table 6

Normalized Indoor Air Concentration in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	D _{air} (m ² /day)	D _{water} (m ² /day)	H (unitless)	D _{crack} (m ² /day)	D _{eff} ^T (m ² /day)	α _∞	K _{oc} (L/kg)	K _d (L/kg)	C _{s, vap} (kg-soil/m ³)	C _{b, ∞} (kg-soil/m ³)	α _{ML}	C _{b, ML} (kg-soil/m ³)	C _{b, norm} (kg-soil/m ³)
VOC	Benzene	71-43-2	7.60E-01	8.47E-05	1.68E-01	1.23E-01	1.23E-01	2.05E-03	5.82E+01	2.91E-01	4.73E+02	9.69E-01	6.06E-05	2.87E-02	2.87E-02
VOC	Cumene	98-82-8	5.62E-01	6.13E-05	3.28E-01	9.09E-02	9.09E-02	2.05E-03	7.05E+02	3.53E+00	9.05E+01	1.85E-01	3.17E-04	2.87E-02	2.87E-02
VOC	1,2-Dibromoethane	106-93-4	3.72E-01	7.29E-05	2.37E-02	6.02E-02	6.01E-02	2.05E-03	2.22E+01	1.11E-01	1.61E+02	3.29E-01	1.78E-04	2.87E-02	2.87E-02
VOC	1,2-Dichloroethane	107-06-2	8.99E-01	8.55E-05	2.92E-02	1.46E-01	1.45E-01	2.05E-03	1.75E+01	8.74E-02	2.33E+02	4.77E-01	1.23E-04	2.87E-02	2.87E-02
VOC	Ethyl Benzene	100-41-4	6.48E-01	6.74E-05	2.20E-01	1.05E-01	1.05E-01	2.05E-03	3.67E+02	1.84E+00	1.15E+02	2.36E-01	2.49E-04	2.87E-02	2.87E-02
VOC	Methyl tert-butyl ether	1634-04-4	7.42E-01	8.73E-05	1.83E-02	1.20E-01	1.20E-01	2.05E-03	1.15E+01	5.75E-02	1.97E+02	4.03E-01	1.46E-04	2.87E-02	2.87E-02
VOC	Toluene	108-88-3	7.52E-01	7.43E-05	1.93E-01	1.22E-01	1.22E-01	2.05E-03	1.80E+02	9.02E-01	1.98E+02	4.06E-01	1.45E-04	2.87E-02	2.87E-02
VOC	1,2,4-Trimethylbenzene	95-63-6	5.24E-01	6.84E-05	1.61E-01	8.48E-02	8.48E-02	2.05E-03	8.97E+02	4.49E+00	3.54E+01	7.25E-02	8.10E-04	2.87E-02	2.87E-02
VOC	1,3,5-Trimethylbenzene	108-67-8	5.20E-01	7.49E-05	1.54E-01	8.42E-02	8.42E-02	2.05E-03	1.76E+03	8.81E+00	1.74E+01	3.55E-02	1.65E-03	2.87E-02	2.87E-02
VOC	Xylenes (total)	1330-20-7	6.74E-01	7.56E-05	2.52E-01	1.09E-01	1.09E-01	2.05E-03	3.86E+02	1.93E+00	1.25E+02	2.56E-01	2.29E-04	2.87E-02	2.87E-02
SVOC	Anthracene	120-12-7	2.80E-01	6.69E-05	1.30E-03	4.54E-02	4.53E-02	2.05E-03	2.97E+04	1.49E+02	8.77E-03	1.80E-05	3.27E+00	2.87E-02	1.80E-05
SVOC	Benzo(a)anthracene	56-55-3	4.41E-01	7.78E-05	5.55E-05	7.19E-02	7.19E-02	2.05E-03	4.01E+05	2.01E+03	2.77E-05	5.67E-08	1.04E+03	2.87E-02	
SVOC	Benzo(a)pyrene	50-32-8	3.72E-01	7.78E-05	1.49E-05	6.23E-02	6.23E-02	2.05E-03	1.01E+06	5.07E+03	2.95E-06	6.03E-09	9.74E+03	2.87E-02	
SVOC	Benzo(b)fluoranthene	205-99-2	1.95E-01	4.80E-05	1.66E-03	3.16E-02	3.16E-02	2.04E-03	1.24E+06	6.22E+03	2.67E-04	5.45E-07	1.08E+02	2.87E-02	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.88E-01	4.54E-05	1.10E-05	3.21E-02	3.21E-02	2.04E-03	1.28E+07	6.40E+04	1.72E-07	3.51E-10	1.67E+05	2.87E-02	
SVOC	Chrysene	218-01-9	2.14E-01	5.37E-05	1.48E-03	3.47E-02	3.47E-02	2.05E-03	4.01E+05	2.01E+03	7.38E-04	1.51E-06	3.89E+01	2.87E-02	
SVOC	Ethanol	64-17-5	1.06E+00	1.12E-04	1.75E-04	1.72E-01	1.72E-01	2.05E-03	6.81E-01	3.40E-03	4.90E+00	1.00E-02	5.85E-03	2.87E-02	
SVOC	Fluorene	86-73-7	3.14E-01	6.81E-05	1.39E-03	5.08E-02	5.08E-02	2.05E-03	1.38E+04	6.88E+01	2.02E-02	4.12E-05	1.42E+00	2.87E-02	4.12E-05
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.64E-01	4.89E-05	2.03E-05	2.76E-02	2.76E-02	2.04E-03	3.45E+06	1.72E+04	1.18E-06	2.41E-09	2.44E+04	2.87E-02	
SVOC	Naphthalene	91-20-3	5.10E-01	6.48E-05	1.20E-02	8.25E-02	8.25E-02	2.05E-03	2.01E+03	1.00E+01	1.19E+00	2.45E-03	2.40E-02	2.87E-02	2.45E-03
SVOC	Phenanthrene	85-01-8	3.24E-01	6.45E-05	1.41E-03	5.25E-02	5.25E-02	2.05E-03	2.42E+04	1.21E+02	1.16E-02	2.37E-05	2.47E+00	2.87E-02	2.37E-05
SVOC	Pyrene	129-00-0	2.35E-01	6.26E-05	2.00E-04	3.82E-02	3.82E-02	2.05E-03	1.06E+05	5.28E+02	3.79E-04	7.76E-07	7.56E+01	2.87E-02	
SVOC	Tetraethylene Glycol	112-60-7	4.39E-01	6.96E-05	1.62E-11	1.76E+03	1.76E+03	1.68E-01	3.00E-02	1.50E-04	5.01E-07	8.40E-08	5.73E+04	2.87E-02	
INORG	Lead	7439-92-1								9.00E+02					

Attachment 2

Table 6

Normalized Indoor Air Concentration in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes: Subsurface and Building Characteristics			Crack Soil
SCS Soil texture class			Sand
Bulk density	kg/L	ρ_b	1.66
Total porosity	L/L-soil	θ_T	0.375
Water-filled porosity	L/L-soil	θ_w	0.053
Air-filled porosity	L/L-soil	θ_a	0.322
Organic carbon fraction	unitless	f_{oc}	NA
Residual saturation	L/L-soil	θ_r	0.053
Hydraulic conductivity	cm/s	K	7.4E-03
Dynamic viscosity of water	g/cm-s	μ_w	0.01307
Density of water	g/cm ³	ρ_w	1.0
Gravitational acceleration	cm/s ²	g	980.7
Intrinsic permeability	cm ²	k	9.9E-08
Relative saturation	unitless	S_e	0.001
van Genuchten N	unitless	N	3.18
van Genuchten M	unitless	M	0.685
Relative air permeability	unitless	k_{rg}	0.999
Permeability to vapor	cm ²	k_v	9.9E-08
Distance from building foundation to source	m	L_{T-soil}	0.001
Bldg foundation thickness	m	L_{crack}	0.1
Bldg foundation length	m		10.00
Bldg foundation width	m		10.00
Bldg occupied height	m		2.44
Bldg occupied volume	m ³		244.00
Occupied depth below ground	m		0.2
Bldg area for vapor intrusion	m ²	A_B	106.0
Ratio of A_{crack} to A_B		η	4E-04
Area of cracks	m ²	A_{crack}	4.00E-02
Air exchange rate	hour ⁻¹	ach	0.6
Building ventilation rate	m ³ /day	Q_{bldg}	3.51E+03
Pressure difference between outdoors-indoors	kg/m-s ²	ΔP	1.0
Viscosity of air	kg/m-s	μ_a	1.8E-05
Crack length (bldg perimeter)	m	X_{crack}	40
Crack depth below ground	m	Z_{crack}	0.25
Crack radius	m	r_{crack}	1E-03
Soil gas flow rate into bldg	m ³ /day	Q_{soil}	7.20E+00
Averaging period	d	ED	9.13E+03
Contaminant thickness	m	ΔH	5.5

Attachment 2

Table 7

Unit Risk and Hazard Quotient Calculations for Soil Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Routine Worker

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{soil} (mg/kg)	C _{air} (mg/m ³)	Cancer		Noncancer	
						URF (mg/m ³) ⁻¹	Risk	RfC (mg/m ³)	HQ
VOC	Benzene	71-43-2	A	1.00E+00	2.87E-02	7.8E-03	1.8E-05	3.0E-02	2.2E-01
VOC	Cumene	98-82-8	D	1.00E+00	2.87E-02			4.0E-01	1.6E-02
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	2.87E-02	6.0E-01	1.4E-03	9.0E-03	7.3E-01
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	2.87E-02	2.6E-02	6.1E-05	7.0E-03	9.4E-01
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	2.87E-02			1.0E+00	6.5E-03
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	2.87E-02	2.6E-04	6.1E-07	3.0E+00	2.2E-03
VOC	Toluene	108-88-3	ID	1.00E+00	2.87E-02			5.0E+00	1.3E-03
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	2.87E-02			6.0E-02	1.1E-01
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	2.87E-02			6.0E-02	1.1E-01
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	2.87E-02			1.0E-01	6.5E-02
SVOC	Anthracene	120-12-7	ID	1.00E+00	1.80E-05				
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		6.0E-02			
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		6.0E-01		2.0E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		6.0E-02			
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00					
SVOC	Chrysene	218-01-9	B2	1.00E+00		6.0E-04			
SVOC	Ethanol	64-17-5		1.00E+00				1.9E+01	
SVOC	Fluorene	86-73-7	D	1.00E+00	4.12E-05				
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		6.0E-02			
SVOC	Naphthalene	91-20-3	C	1.00E+00	2.45E-03	3.4E-02	6.8E-06	3.0E-03	1.9E-01
SVOC	Phenanthrene	85-01-8	D	1.00E+00	2.37E-05				
SVOC	Pyrene	129-00-0	NC	1.00E+00					
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00					
INORG	Lead	7439-92-1	B2	1.00E+00					

Attachment 2

Table 8

Normalized Vapor Flux to Outdoor Air from Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	H (unitless)	D _{eff} ^T (m ² /day)	J (L/m ² -s)	C _{air} (L/m ³)
VOC	Benzene	71-43-2	1.68E-01	3.92E-03	1.32E-06	3.31E-05
VOC	Cumene	98-82-8	3.28E-01	1.63E-03	1.07E-06	2.68E-05
VOC	1,2-Dibromoethane	106-93-4	2.37E-02	1.25E-02	5.93E-07	1.49E-05
VOC	1,2-Dichloroethane	107-06-2	2.92E-02	1.61E-02	9.41E-07	2.36E-05
VOC	Ethyl Benzene	100-41-4	2.20E-01	2.53E-03	1.11E-06	2.78E-05
VOC	Methyl tert-butyl ether	1634-04-4	1.83E-02	2.12E-02	7.79E-07	1.95E-05
VOC	Toluene	108-88-3	1.93E-01	3.14E-03	1.21E-06	3.03E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	1.61E-01	3.19E-03	1.03E-06	2.58E-05
VOC	1,3,5-Trimethylbenzene	108-67-8	1.54E-01	3.56E-03	1.10E-06	2.75E-05
VOC	Xylenes (total)	1330-20-7	2.52E-01	2.50E-03	1.26E-06	3.15E-05
SVOC	Anthracene	120-12-7	1.30E-03	3.20E-02	8.34E-08	2.09E-06
SVOC	Benzo(a)anthracene	56-55-3	5.55E-05	6.89E-02	7.65E-09	
SVOC	Benzo(a)pyrene	50-32-8	1.49E-05	6.47E-02	1.93E-09	
SVOC	Benzo(b)fluoranthene	205-99-2	1.66E-03	2.14E-02	7.09E-08	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.10E-05	3.41E-02	7.49E-10	
SVOC	Chrysene	218-01-9	1.48E-03	2.41E-02	7.13E-08	
SVOC	Ethanol	64-17-5	1.75E-04	1.45E-01	5.06E-08	
SVOC	Fluorene	86-73-7	1.39E-03	3.47E-02	9.63E-08	2.41E-06
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.03E-05	2.87E-02	1.16E-09	
SVOC	Naphthalene	91-20-3	1.20E-02	1.99E-02	4.78E-07	1.20E-05
SVOC	Phenanthrene	85-01-8	1.41E-03	3.51E-02	9.87E-08	2.47E-06
SVOC	Pyrene	129-00-0	2.00E-04	3.45E-02	1.38E-08	
SVOC	Tetraethylene Glycol	112-60-7	1.62E-11	2.38E+03	7.72E-11	
INORG	Lead	7439-92-1				

Parameters

Depth to groundwater	m	DTW	5.79
Dispersion coefficient	(L/m ³) / (L/m ² /s)	C/Q	25.1

Attachment 2

Table 9

Unit Risk and Hazard Quotient Calculations for Exposure of Routine Workers to Groundwater-derived Vapors in Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{GW} (mg/L)	C _{air} (mg/m ³)	Cancer		Noncancer	
						URF (mg/m ³) ⁻¹	Risk	RfC (mg/m ³)	HQ
VOC	Benzene	71-43-2	A	1.00E+00	3.31E-05	7.8E-03	1.5E-08	3.0E-02	1.8E-04
VOC	Cumene	98-82-8	D	1.00E+00	2.68E-05			4.0E-01	1.1E-05
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	1.49E-05	6.0E-01	5.2E-07	9.0E-03	2.7E-04
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	2.36E-05	2.6E-02	3.6E-08	7.0E-03	5.5E-04
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	2.78E-05			1.0E+00	4.6E-06
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	1.95E-05	2.6E-04	3.0E-10	3.0E+00	1.1E-06
VOC	Toluene	108-88-3	ID	1.00E+00	3.03E-05			5.0E+00	1.0E-06
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	2.58E-05			6.0E-02	7.1E-05
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	2.75E-05			6.0E-02	7.5E-05
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	3.15E-05			1.0E-01	5.2E-05
SVOC	Anthracene	120-12-7	ID	1.00E+00	2.09E-06				
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		6.0E-02			
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		6.0E-01		2.0E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		6.0E-02			
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00					
SVOC	Chrysene	218-01-9	B2	1.00E+00		6.0E-04			
SVOC	Ethanol	64-17-5		1.00E+00				1.9E+01	
SVOC	Fluorene	86-73-7	D	1.00E+00	2.41E-06				
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		6.0E-02			
SVOC	Naphthalene	91-20-3	C	1.00E+00	1.20E-05	3.4E-02	2.4E-08	3.0E-03	6.6E-04
SVOC	Phenanthrene	85-01-8	D	1.00E+00	2.47E-06				
SVOC	Pyrene	129-00-0	NC	1.00E+00					
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00					
INORG	Lead	7439-92-1	B2	1.00E+00					

Attachment 2

Table 10

Normalized Indoor Air Concentration in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	D _{air} (m ² /day)	D _{water} (m ² /day)	H (unitless)	D _{crack} (m ² /day)	D _{eff} ^T (m ² /day)	α _{soil}	α _{slab}	α _∞	C _{b, norm} (L-water/m ³)
VOC	Benzene	71-43-2	7.60E-01	8.47E-05	1.68E-01	1.23E-01	3.74E-03	9.83E-03	2.05E-03	2.01E-05	3.39E-03
VOC	Cumene	98-82-8	5.62E-01	6.13E-05	3.28E-01	9.09E-02	1.56E-03	4.12E-03	2.05E-03	8.44E-06	2.76E-03
VOC	1,2-Dibromoethane	106-93-4	3.72E-01	7.29E-05	2.37E-02	6.02E-02	1.20E-02	3.09E-02	2.05E-03	6.34E-05	1.51E-03
VOC	1,2-Dichloroethane	107-06-2	8.99E-01	8.55E-05	2.92E-02	1.46E-01	1.54E-02	3.94E-02	2.05E-03	8.08E-05	2.36E-03
VOC	Ethyl Benzene	100-41-4	6.48E-01	6.74E-05	2.20E-01	1.05E-01	2.41E-03	6.36E-03	2.05E-03	1.30E-05	2.87E-03
VOC	Methyl tert-butyl ether	1634-04-4	7.42E-01	8.73E-05	1.83E-02	1.20E-01	2.04E-02	5.14E-02	2.05E-03	1.05E-04	1.93E-03
VOC	Toluene	108-88-3	7.52E-01	7.43E-05	1.93E-01	1.22E-01	2.99E-03	7.89E-03	2.05E-03	1.62E-05	3.12E-03
VOC	1,2,4-Trimethylbenzene	95-63-6	5.24E-01	6.84E-05	1.61E-01	8.48E-02	3.05E-03	8.03E-03	2.05E-03	1.64E-05	2.65E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	5.20E-01	7.49E-05	1.54E-01	8.42E-02	3.40E-03	8.95E-03	2.05E-03	1.83E-05	2.82E-03
VOC	Xylenes (total)	1330-20-7	6.74E-01	7.56E-05	2.52E-01	1.09E-01	2.39E-03	6.30E-03	2.05E-03	1.29E-05	3.25E-03
SVOC	Anthracene	120-12-7	2.80E-01	6.69E-05	1.30E-03	4.54E-02	3.15E-02	7.73E-02	2.05E-03	1.58E-04	2.07E-04
SVOC	Benzo(a)anthracene	56-55-3	4.41E-01	7.78E-05	5.55E-05	7.19E-02	6.88E-02	1.54E-01	2.05E-03	3.17E-04	
SVOC	Benzo(a)pyrene	50-32-8	3.72E-01	7.78E-05	1.49E-05	6.23E-02	6.48E-02	1.47E-01	2.05E-03	3.01E-04	
SVOC	Benzo(b)fluoranthene	205-99-2	1.95E-01	4.80E-05	1.66E-03	3.16E-02	2.10E-02	5.29E-02	2.05E-03	1.08E-04	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.88E-01	4.54E-05	1.10E-05	3.21E-02	3.42E-02	8.33E-02	2.05E-03	1.71E-04	
SVOC	Chrysene	218-01-9	2.14E-01	5.37E-05	1.48E-03	3.47E-02	2.37E-02	5.94E-02	2.05E-03	1.22E-04	
SVOC	Ethanol	64-17-5	1.06E+00	1.12E-04	1.75E-04	1.72E-01	1.44E-01	2.76E-01	2.05E-03	5.66E-04	
SVOC	Fluorene	86-73-7	3.14E-01	6.81E-05	1.39E-03	5.08E-02	3.42E-02	8.33E-02	2.05E-03	1.71E-04	2.37E-04
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.64E-01	4.89E-05	2.03E-05	2.76E-02	2.87E-02	7.10E-02	2.05E-03	1.45E-04	
SVOC	Naphthalene	91-20-3	5.10E-01	6.48E-05	1.20E-02	8.25E-02	1.91E-02	4.84E-02	2.05E-03	9.91E-05	1.19E-03
SVOC	Phenanthrene	85-01-8	3.24E-01	6.45E-05	1.41E-03	5.25E-02	3.46E-02	8.41E-02	2.05E-03	1.72E-04	2.42E-04
SVOC	Pyrene	129-00-0	2.35E-01	6.26E-05	2.00E-04	3.82E-02	3.43E-02	8.35E-02	2.05E-03	1.71E-04	
SVOC	Tetraethylene Glycol	112-60-7	4.39E-01	6.96E-05	1.62E-11	1.76E+03	2.43E+03	9.87E-01	1.68E-01	1.66E-01	
INORG	Lead	7439-92-1									

Attachment 2

Table 10

Normalized Indoor Air Concentration in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

Subsurface and Building Characteristics			Crack Soil
SCS Soil texture class			Sand
Bulk density	kg/L	ρ_b	1.66
Total porosity	L/L-soil	θ_T	0.375
Water-filled porosity	L/L-soil	θ_w	0.053
Air-filled porosity	L/L-soil	θ_a	0.322
Residual saturation	L/L-soil	θ_r	0.053
Hydraulic conductivity	cm/s	K	7.4E-03
Dynamic viscosity of water	g/cm-s	μ_w	0.01307
Density of water	g/cm ³	ρ_w	1.0
Gravitational acceleration	cm/s ²	g	980.7
Intrinsic permeability	cm ²	k	9.9E-08
Relative saturation	unitless	S_e	0.001
van Genuchten N	unitless	N	3.177
van Genuchten M	unitless	M	0.685
Relative air permeability	unitless	k_{rg}	0.999
Permeability to vapor	cm ²	k_v	9.91E-08
Distance from foundation to source	m	L_{T-gw}	5.54
Bldg foundation thickness	m	L_{crack}	0.1
Bldg foundation length	m		10.00
Bldg foundation width	m		10.00
Bldg occupied height	m		2.44
Bldg occupied volume	m ³		244.00
Occupied depth below ground	m		0.2
Bldg area for vapor intrusion	m ²	A_B	106.0
Ratio of A_{crack} to A_B		η	4E-04
Area of cracks	m ²	A_{crack}	4E-02
Air exchange rate	hour ⁻¹	ach	0.60
Building ventilation rate	m ³ /day	Q_{bldg}	3.5E+03
Pressure diff. outdoors-indoors	kg/m-s ²	ΔP	1.0
Viscosity of air	kg/m-s	μ_a	1.8E-05
Crack length (bldg perimeter)	m	X_{crack}	40
Crack depth below ground	m	Z_{crack}	0.25
Crack radius	m	r_{crack}	1E-03
Soil gas flow rate into bldg	m ³ /day	Q_{soil}	7.20

Attachment 2

Table 11

Unit Risk and Hazard Quotient Calculations for Groundwater Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Routine Worker

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{gw} (mg/L)	C _{air} (mg/m ³)	Cancer		Noncancer	
						URF (mg/m ³) ⁻¹	Risk	RfC (mg/m ³)	HQ
VOC	Benzene	71-43-2	A	1.00E+00	3.39E-03	7.8E-03	2.2E-06	3.0E-02	2.6E-02
VOC	Cumene	98-82-8	D	1.00E+00	2.76E-03			4.0E-01	1.6E-03
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	1.51E-03	6.0E-01	7.4E-05	9.0E-03	3.8E-02
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	2.36E-03	2.6E-02	5.0E-06	7.0E-03	7.7E-02
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	2.87E-03			1.0E+00	6.5E-04
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	1.93E-03	2.6E-04	4.1E-08	3.0E+00	1.5E-04
VOC	Toluene	108-88-3	ID	1.00E+00	3.12E-03			5.0E+00	1.4E-04
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	2.65E-03			6.0E-02	1.0E-02
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	2.82E-03			6.0E-02	1.1E-02
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	3.25E-03			1.0E-01	7.4E-03
SVOC	Anthracene	120-12-7	ID	1.00E+00	2.07E-04				
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		6.0E-02			
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		6.0E-01		2.0E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		6.0E-02			
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00					
SVOC	Chrysene	218-01-9	B2	1.00E+00		6.0E-04			
SVOC	Ethanol	64-17-5		1.00E+00				1.9E+01	
SVOC	Fluorene	86-73-7	D	1.00E+00	2.37E-04				
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		6.0E-02			
SVOC	Naphthalene	91-20-3	C	1.00E+00	1.19E-03	3.4E-02	3.3E-06	3.0E-03	9.1E-02
SVOC	Phenanthrene	85-01-8	D	1.00E+00	2.42E-04				
SVOC	Pyrene	129-00-0	NC	1.00E+00					
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00					
INORG	Lead	7439-92-1	B2	1.00E+00					

Attachment 3

Maintenance Worker Risk Calculations

Table 1 – Normalized Average Vapor Flux from Soil to Outdoor Air

Table 2 – Dispersion Factor to Outdoor Air

Table 3 – Concentrations in Outdoor Air from Soil

Table 4a – Unit Risk Calculations for Exposure of Maintenance Workers to Soil

Table 4b – Unit Hazard Quotient Calculations for Exposure of Maintenance Workers to Soil

Table 5 – Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Table 6 – Dermal Absorbed Dose for Groundwater

Table 7a – Unit Risk Calculations for Exposure of Maintenance Workers to Groundwater in Excavations

Table 7b – Unit Hazard Quotient Calculations for Exposure of Maintenance Workers to Groundwater in Excavations



Attachment 3

Table 1

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	D _{air} (m ² /d)	D _{water} (m ² /d)	D _G (m ² /d)	D _L (m ² /d)	D _E (m ² /d)	J _v (kg/m ² -s)
VOC	Benzene	71-43-2	5.82E+01		1.68E-01	7.60E-01	8.47E-05	1.23E-01	3.46E-08	3.51E-02	2.61E-05
VOC	Cumene	98-82-8	7.05E+02		3.28E-01	5.62E-01	6.13E-05	9.10E-02	2.51E-08	4.96E-03	1.96E-05
VOC	1,2-Dibromoethane	106-93-4	2.22E+01		2.37E-02	3.72E-01	7.29E-05	6.02E-02	2.98E-08	5.83E-03	2.03E-05
VOC	1,2-Dichloroethane	107-06-2	1.75E+01		2.92E-02	8.99E-01	8.55E-05	1.46E-01	3.50E-08	2.04E-02	2.48E-05
VOC	Ethyl Benzene	100-41-4	3.67E+02		2.20E-01	6.48E-01	6.74E-05	1.05E-01	2.76E-08	7.27E-03	2.13E-05
VOC	Methyl tert-butyl ether	1634-04-4	1.15E+01		1.83E-02	7.42E-01	8.73E-05	1.20E-01	3.57E-08	1.43E-02	2.38E-05
VOC	Toluene	108-88-3	1.80E+02		1.93E-01	7.52E-01	7.43E-05	1.22E-01	3.04E-08	1.46E-02	2.38E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	8.97E+02		1.61E-01	5.24E-01	6.84E-05	8.48E-02	2.80E-08	1.81E-03	1.44E-05
VOC	1,3,5-Trimethylbenzene	108-67-8	1.76E+03		1.54E-01	5.20E-01	7.49E-05	8.42E-02	3.06E-08	8.81E-04	1.05E-05
VOC	Xylenes (total)	1330-20-7	3.86E+02		2.52E-01	6.74E-01	7.56E-05	1.09E-01	3.09E-08	8.23E-03	2.18E-05
SVOC	Anthracene	120-12-7	2.97E+04		1.30E-03	2.80E-01	6.69E-05	4.53E-02	2.74E-08	2.40E-07	1.76E-07
SVOC	Benzo(a)anthracene	56-55-3	4.01E+05		5.55E-05	4.41E-01	7.78E-05	7.14E-02	3.18E-08	1.20E-09	
SVOC	Benzo(a)pyrene	50-32-8	1.01E+06		1.49E-05	3.72E-01	7.78E-05	6.02E-02	3.18E-08	1.11E-10	
SVOC	Benzo(b)fluoranthene	205-99-2	1.24E+06		1.66E-03	1.95E-01	4.80E-05	3.16E-02	1.97E-08	5.08E-09	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.28E+07		1.10E-05	1.88E-01	4.54E-05	3.04E-02	1.86E-08	3.32E-12	
SVOC	Chrysene	218-01-9	4.01E+05		1.48E-03	2.14E-01	5.37E-05	3.47E-02	2.20E-08	1.54E-08	
SVOC	Ethanol	64-17-5	6.81E-01		1.75E-04	1.06E+00	1.12E-04	1.72E-01	4.60E-08	5.09E-04	
SVOC	Fluorene	86-73-7	1.38E+04		1.39E-03	3.14E-01	6.81E-05	5.08E-02	2.79E-08	6.17E-07	2.82E-07
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.45E+06		2.03E-05	1.64E-01	4.89E-05	2.66E-02	2.00E-08	1.96E-11	
SVOC	Naphthalene	91-20-3	2.01E+03		1.20E-02	5.10E-01	6.48E-05	8.26E-02	2.65E-08	5.94E-05	2.77E-06
SVOC	Phenanthrene	85-01-8	2.42E+04		1.41E-03	3.24E-01	6.45E-05	5.25E-02	2.64E-08	3.67E-07	2.17E-07
SVOC	Pyrene	129-00-0	1.06E+05		2.00E-04	2.35E-01	6.26E-05	3.81E-02	2.56E-08	8.73E-09	
SVOC	Tetraethylene Glycol	112-60-7	3.00E-02		1.62E-11	4.39E-01	6.96E-05	7.11E-02	2.85E-08	5.30E-07	
INORG	Lead	7439-92-1		9.00E+02							

Attachment 3

Table 1

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

Soil bulk density	kg/L	ρ_b	1.66
Soil porosity	L/L-soil	θ	0.38
Soil water content	L/L-soil	θ_w	0.05
Soil air-filled porosity	L/L-soil	θ_a	0.32
Soil organic carbon fraction	unitless	f_{oc}	0.005
Averaging period (Exposure Duration)	years	T	10
	days	T	3650
Temperature	$^{\circ}\text{C}$	Temp	18
Clean soil above source	m	Z_1	
Bottom of source depth	m	Z_2	5.79

Based on the volatilization model developed by Jury et. al. (1983) for finite sources as described in USEPA's (1996) Soil Screening Guidance: Technical Background Document. The K_d for organic compounds is the K_{oc} times the f_{oc} .

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Table 2

Dispersion Factor to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Parameter	Units	Value
Correlation coefficient city		Philadelphia
Correlation coefficient A		14.0111
Correlation coefficient B		19.6154
Correlation coefficient C		225.3397

Soil source area	acres	70.6
		Annual
Soil C/Q averaging time		Max
Conversion factor from 1-Hr Max for soil		0.19
C/Q for soil	$(\text{kg}/\text{m}^3)/(\text{kg}/\text{m}^2\text{-s})$	25.06

Groundwater source area	acres	0.0052
		24-Hour
Groundwater averaging time for C/Q		Max
Conversion factor from 1-Hr Max for groundwater		0.40
C/Q for Groundwater	$(\text{L}/\text{m}^3)/(\text{L}/\text{m}^2\text{-s})$	9.63

Note:

C/Q is estimated using the empirical correlation in USEPA's (2002) Supplemental Soil Screening Guidance.

Attachment 3

Table 3

Concentrations in Outdoor Air from Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Chem	Chemical	CASRN	Vapor		PM ₁₀	
			C _{soil} (mg/kg)	C _{air} (mg/m ³)	C _{soil} (mg/kg)	C _{air} (mg/m ³)
			C/Q (kg/m ³ per kg/m ² -s): 2.5E+01			
VOC	Benzene	71-43-2	1.00E+00	6.55E-04	1.00E+00	5.00E-08
VOC	Cumene	98-82-8	1.00E+00	4.91E-04	1.00E+00	5.00E-08
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	5.10E-04	1.00E+00	5.00E-08
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	6.22E-04	1.00E+00	5.00E-08
VOC	Ethyl Benzene	100-41-4	1.00E+00	5.34E-04	1.00E+00	5.00E-08
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	5.95E-04	1.00E+00	5.00E-08
VOC	Toluene	108-88-3	1.00E+00	5.97E-04	1.00E+00	5.00E-08
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	3.60E-04	1.00E+00	5.00E-08
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	2.64E-04	1.00E+00	5.00E-08
VOC	Xylenes (total)	1330-20-7	1.00E+00	5.46E-04	1.00E+00	5.00E-08
SVOC	Anthracene	120-12-7	1.00E+00	4.40E-06	1.00E+00	5.00E-08
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		1.00E+00	5.00E-08
SVOC	Chrysene	218-01-9	1.00E+00		1.00E+00	5.00E-08
SVOC	Ethanol	64-17-5	1.00E+00		1.00E+00	5.00E-08
SVOC	Fluorene	86-73-7	1.00E+00	7.06E-06	1.00E+00	5.00E-08
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		1.00E+00	5.00E-08
SVOC	Naphthalene	91-20-3	1.00E+00	6.93E-05	1.00E+00	5.00E-08
SVOC	Phenanthrene	85-01-8	1.00E+00	5.44E-06	1.00E+00	5.00E-08
SVOC	Pyrene	129-00-0	1.00E+00		1.00E+00	5.00E-08
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		1.00E+00	5.00E-08
INORG	Lead	7439-92-1	1.00E+00		1.00E+00	5.00E-08

Attachment 3

Table 4a

Unit Risk Calculations for Exposure of Maintenance Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	C _{soil} (mg/kg)	Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes Risk
					RBA	LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	Risk	ABS _{derm}	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	Risk	C _{air} (mg/m ³)	URF (m ³ /mg)	Risk	C _{air} (mg/m ³)	URF (mg/m ³) ⁻¹	Risk	
VOC	Benzene	71-43-2	A	1.00E+00		1.47E-08	5.5E-02	8.1E-10			5.5E-02		6.55E-04	7.8E-03	2.0E-08	5.00E-08	7.8E-03	1.5E-12	2.1E-08
VOC	Cumene	98-82-8	D	1.00E+00		1.47E-08							4.91E-04			5.00E-08			
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00		1.47E-08	2.0E+00	2.9E-08			2.0E+00		5.10E-04	6.0E-01	1.2E-06	5.00E-08	6.0E-01	1.2E-10	1.2E-06
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00		1.47E-08	9.1E-02	1.3E-09			9.1E-02		6.22E-04	2.6E-02	6.3E-08	5.00E-08	2.6E-02	5.1E-12	6.5E-08
VOC	Ethyl Benzene	100-41-4	D	1.00E+00		1.47E-08							5.34E-04			5.00E-08			
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00		1.47E-08	1.8E-03	2.6E-11			1.8E-03		5.95E-04	2.6E-04	6.1E-10	5.00E-08	2.6E-04	5.1E-14	6.3E-10
VOC	Toluene	108-88-3	ID	1.00E+00		1.47E-08							5.97E-04			5.00E-08			
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00		1.47E-08							3.60E-04			5.00E-08			
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00		1.47E-08							2.64E-04			5.00E-08			
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00		1.47E-08							5.46E-04			5.00E-08			
SVOC	Anthracene	120-12-7	ID	1.00E+00		1.47E-08			1.30E-01	8.08E-09			4.40E-06			5.00E-08			
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		1.47E-08	1.0E-01	1.5E-09	1.30E-01	8.08E-09	1.0E-01	8.1E-10		6.0E-02		5.00E-08	6.0E-02	1.2E-11	2.3E-09
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		1.47E-08	1.0E+00	1.5E-08	1.30E-01	8.08E-09	1.0E+00	8.1E-09		6.0E-01		5.00E-08	6.0E-01	1.2E-10	2.3E-08
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		1.47E-08	1.0E-01	1.5E-09	1.30E-01	8.08E-09	1.0E-01	8.1E-10		6.0E-02		5.00E-08	6.0E-02	1.2E-11	2.3E-09
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00		1.47E-08			1.30E-01	8.08E-09						5.00E-08			
SVOC	Chrysene	218-01-9	B2	1.00E+00		1.47E-08	1.0E-03	1.5E-11	1.30E-01	8.08E-09	1.0E-03	8.1E-12		6.0E-04		5.00E-08	6.0E-04	1.2E-13	2.3E-11
SVOC	Ethanol	64-17-5		1.00E+00		1.47E-08										5.00E-08			
SVOC	Fluorene	86-73-7	D	1.00E+00		1.47E-08			1.30E-01	8.08E-09			7.06E-06			5.00E-08			
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		1.47E-08	1.0E-01	1.5E-09	1.30E-01	8.08E-09	1.0E-01	8.1E-10		6.0E-02		5.00E-08	6.0E-02	1.2E-11	2.3E-09
SVOC	Naphthalene	91-20-3	C	1.00E+00		1.47E-08	1.2E-01	1.8E-09	1.30E-01	8.08E-09	1.2E-01	9.7E-10	6.93E-05	3.4E-02	9.2E-09	5.00E-08	3.4E-02	6.7E-12	1.2E-08
SVOC	Phenanthrene	85-01-8	D	1.00E+00		1.47E-08			1.30E-01	8.08E-09			5.44E-06			5.00E-08			
SVOC	Pyrene	129-00-0	NC	1.00E+00		1.47E-08			1.30E-01	8.08E-09						5.00E-08			
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00		1.47E-08			1.00E-01	6.21E-09						5.00E-08			
INORG	Lead	7439-92-1	B2	1.00E+00		1.47E-08										5.00E-08			

Notes:

The concentration of particulates in the air is assumed to be no more than the former annual National Ambient Air Quality Standards (NAAQS) for PM₁₀ of 50 ug/m³.

Attachment 3

Table 4b

Unit Hazard Quotient Calculations for Exposure of Maintenance Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{soil} (mg/kg)	Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes	
				RBA	ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	ABS _{derm}	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	HQ	
VOC	Benzene	71-43-2	1.00E+00		1.03E-07	4.0E-03	2.6E-05			4.0E-03			6.55E-04	3.0E-02	6.0E-04	5.00E-08	3.0E-02	4.6E-08	6.2E-04
VOC	Cumene	98-82-8	1.00E+00		1.03E-07	1.0E-01	1.0E-06			1.0E-01			4.91E-04	4.0E-01	3.4E-05	5.00E-08	4.0E-01	3.4E-09	3.5E-05
VOC	1,2-Dibromoethane	106-93-4	1.00E+00		1.03E-07	9.0E-03	1.1E-05			9.0E-03			5.10E-04	9.0E-03	1.6E-03	5.00E-08	9.0E-03	1.5E-07	1.6E-03
VOC	1,2-Dichloroethane	107-06-2	1.00E+00		1.03E-07	2.0E-02	5.1E-06			2.0E-02			6.22E-04	7.0E-03	2.4E-03	5.00E-08	7.0E-03	2.0E-07	2.4E-03
VOC	Ethyl Benzene	100-41-4	1.00E+00		1.03E-07	1.0E-01	1.0E-06			1.0E-01			5.34E-04	1.0E+00	1.5E-05	5.00E-08	1.0E+00	1.4E-09	1.6E-05
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00		1.03E-07	3.0E-01	3.4E-07			3.0E-01			5.95E-04	3.0E+00	5.4E-06	5.00E-08	3.0E+00	4.6E-10	5.8E-06
VOC	Toluene	108-88-3	1.00E+00		1.03E-07	8.0E-02	1.3E-06			8.0E-02			5.97E-04	5.0E+00	3.3E-06	5.00E-08	5.0E+00	2.7E-10	4.6E-06
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00		1.03E-07	1.0E-02	1.0E-05			1.0E-02			3.60E-04	6.0E-02	1.6E-04	5.00E-08	6.0E-02	2.3E-08	1.7E-04
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00		1.03E-07	1.0E-02	1.0E-05			1.0E-02			2.64E-04	6.0E-02	1.2E-04	5.00E-08	6.0E-02	2.3E-08	1.3E-04
VOC	Xylenes (total)	1330-20-7	1.00E+00		1.03E-07	2.0E-01	5.1E-07			2.0E-01			5.46E-04	1.0E-01	1.5E-04	5.00E-08	1.0E-01	1.4E-08	1.5E-04
SVOC	Anthracene	120-12-7	1.00E+00		1.03E-07	3.0E-01	3.4E-07	1.30E-01	5.65E-08	3.0E-01	1.9E-07		4.40E-06			5.00E-08			5.3E-07
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		1.03E-07			1.30E-01	5.65E-08							5.00E-08			
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		1.03E-07	3.0E-04	3.4E-04	1.30E-01	5.65E-08	3.0E-04	1.9E-04			2.0E-06		5.00E-08	2.0E-06	6.8E-04	1.2E-03
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		1.03E-07			1.30E-01	5.65E-08							5.00E-08			
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		1.03E-07	3.0E-02	3.4E-06	1.30E-01	5.65E-08	3.0E-02	1.9E-06					5.00E-08			5.3E-06
SVOC	Chrysene	218-01-9	1.00E+00		1.03E-07			1.30E-01	5.65E-08							5.00E-08			
SVOC	Ethanol	64-17-5	1.00E+00		1.03E-07	6.2E+01	1.7E-09			6.2E+01				1.9E+01		5.00E-08	1.9E+01	7.2E-11	1.7E-09
SVOC	Fluorene	86-73-7	1.00E+00		1.03E-07	4.0E-02	2.6E-06	1.30E-01	5.65E-08	4.0E-02	1.4E-06		7.06E-06			5.00E-08			4.0E-06
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		1.03E-07			1.30E-01	5.65E-08							5.00E-08			
SVOC	Naphthalene	91-20-3	1.00E+00		1.03E-07	2.0E-02	5.1E-06	1.30E-01	5.65E-08	2.0E-02	2.8E-06		6.93E-05	3.0E-03	6.3E-04	5.00E-08	3.0E-03	4.6E-07	6.4E-04
SVOC	Phenanthrene	85-01-8	1.00E+00		1.03E-07	3.0E-02	3.4E-06	1.30E-01	5.65E-08	3.0E-02	1.9E-06		5.44E-06			5.00E-08			5.3E-06
SVOC	Pyrene	129-00-0	1.00E+00		1.03E-07	3.0E-02	3.4E-06	1.30E-01	5.65E-08	3.0E-02	1.9E-06					5.00E-08			5.3E-06
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		1.03E-07	2.0E+00	5.1E-08	1.00E-01	4.35E-08	2.0E+00	2.2E-08					5.00E-08			7.3E-08
INORG	Lead	7439-92-1	1.00E+00		1.03E-07											5.00E-08			

Notes:

The concentration of particulates in the air is assumed to be no more than the former annual National Ambient Air Quality Standards (NAAQS) for PM₁₀ of 50 ug/m³.

Attachment 3

Table 5

Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	H (unitless)	MW (g/mol)	k_G (cm/s)	k_L (cm/s)	$1/K_L$ (s/cm)	K_L (cm/s)	J_L (L/m ² -s)
VOC	Benzene	71-43-2	1.7E-01	7.8E+01	4.97E-01	1.25E-03	8.12E+02	1.23E-03	1.23E-02
VOC	Cumene	98-82-8	3.3E-01	1.2E+02	4.31E-01	1.01E-03	9.99E+02	1.00E-03	1.00E-02
VOC	1,2-Dibromoethane	106-93-4	2.4E-02	1.9E+02	3.71E-01	8.06E-04	1.35E+03	7.38E-04	7.38E-03
VOC	1,2-Dichloroethane	107-06-2	2.9E-02	9.9E+01	4.60E-01	1.11E-03	9.75E+02	1.03E-03	1.03E-02
VOC	Ethyl Benzene	100-41-4	2.2E-01	1.1E+02	4.49E-01	1.07E-03	9.43E+02	1.06E-03	1.06E-02
VOC	Methyl tert-butyl ether	1634-04-4	1.8E-02	8.8E+01	4.78E-01	1.18E-03	9.64E+02	1.04E-03	1.04E-02
VOC	Toluene	108-88-3	1.9E-01	9.2E+01	4.71E-01	1.15E-03	8.80E+02	1.14E-03	1.14E-02
VOC	1,2,4-Trimethylbenzene	95-63-6	1.6E-01	1.2E+02	4.31E-01	1.01E-03	1.01E+03	9.93E-04	9.93E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	1.5E-01	1.2E+02	4.31E-01	1.01E-03	1.01E+03	9.93E-04	9.93E-03
VOC	Xylenes (total)	1330-20-7	2.5E-01	1.1E+02	4.49E-01	1.07E-03	9.42E+02	1.06E-03	1.06E-02
SVOC	Anthracene	120-12-7	1.3E-03	1.8E+02	3.77E-01	8.28E-04	3.24E+03	3.09E-04	3.09E-03
SVOC	Benzo(a)anthracene	56-55-3	5.6E-05	2.3E+02	3.47E-01	7.31E-04	5.32E+04	1.88E-05	
SVOC	Benzo(a)pyrene	50-32-8	1.5E-05	2.5E+02	3.36E-01	6.96E-04	2.01E+05	4.98E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	1.7E-03	2.5E+02	3.36E-01	6.96E-04	3.23E+03	3.09E-04	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.1E-05	2.8E+02	3.26E-01	6.65E-04	2.81E+05	3.56E-06	
SVOC	Chrysene	218-01-9	1.5E-03	2.3E+02	3.47E-01	7.31E-04	3.31E+03	3.02E-04	
SVOC	Ethanol	64-17-5	1.7E-04	4.6E+01	5.94E-01	1.63E-03	1.02E+04	9.76E-05	
SVOC	Fluorene	86-73-7	1.4E-03	1.7E+02	3.86E-01	8.57E-04	3.03E+03	3.30E-04	3.30E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.0E-05	2.8E+02	3.26E-01	6.65E-04	1.53E+05	6.54E-06	
SVOC	Naphthalene	91-20-3	1.2E-02	1.3E+02	4.21E-01	9.76E-04	1.22E+03	8.18E-04	8.18E-03
SVOC	Phenanthrene	85-01-8	1.4E-03	1.8E+02	3.77E-01	8.28E-04	3.09E+03	3.23E-04	3.23E-03
SVOC	Pyrene	129-00-0	2.0E-04	2.0E+02	3.62E-01	7.77E-04	1.51E+04	6.62E-05	
SVOC	Tetraethylene Glycol	112-60-7	1.6E-11	1.9E+02	3.67E-01	7.93E-04	1.68E+11	5.95E-12	
INORG	Lead	7439-92-1		2.1E+02	3.59E-01	7.68E-04			

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Table 5

Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Molecular Weight of Oxygen	g/mol	MW_{O2}	32
Molecular Weight of Water	g/mol	MW_{H2O}	18
Temperature	K	Temp	291
Liquid-phase Mass Transfer Coefficient for Oxygen	cm/s	k_{L,O2}	0.002
Gas-Phase Mass Transfer Coefficient for Water Vapor at 25 °C	cm/s (L/m ³) /	K_{G,H2O}	0.833
Dispersion coefficient	(L/m ² /s)	C/Q	9.6

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Table 6

Dermal Absorbed Dose for Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	MW (g/mole)	FA (unitless)	K _p (cm/hr)	B (unitless)	t (hr)	c	b	ts (hr)	DA (L/cm ² -event)
VOC	Benzene	71-43-2	7.8E+01	1.0E+00	1.5E-02	5.0E-02	2.9E-01	3.7E-01	3.3E-01	6.9E-01	3.70E-05
VOC	Cumene	98-82-8	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	1,2-Dibromoethane	106-93-4	1.9E+02	1.0E+00	1.6E-03	8.4E-03	1.2E+00	3.4E-01	3.1E-01	2.8E+00	6.81E-06
VOC	1,2-Dichloroethane	107-06-2	9.9E+01	1.0E+00	4.1E-03	1.6E-02	3.8E-01	3.4E-01	3.1E-01	9.0E-01	1.13E-05
VOC	Ethyl Benzene	100-41-4	1.1E+02	1.0E+00	4.8E-02	1.9E-01	4.1E-01	4.7E-01	4.3E-01	9.9E-01	1.27E-04
VOC	Methyl tert-butyl ether	1634-04-4	8.8E+01	1.0E+00	3.3E-03	1.2E-02	3.3E-01	3.4E-01	3.1E-01	7.9E-01	8.84E-06
VOC	Toluene	108-88-3	9.2E+01	1.0E+00	3.2E-02	1.2E-01	3.5E-01	4.2E-01	3.8E-01	8.3E-01	8.08E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	1,3,5-Trimethylbenzene	108-67-8	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	Xylenes (total)	1330-20-7	1.1E+02	1.0E+00	5.0E-02	2.0E-01	4.1E-01	4.8E-01	4.4E-01	9.9E-01	1.32E-04
SVOC	Anthracene	120-12-7	1.8E+02	1.0E+00			1.0E+00	3.3E-01	3.0E-01	2.5E+00	
SVOC	Benzo(a)anthracene	56-55-3	2.3E+02	9.0E-01			2.0E+00	3.3E-01	3.0E-01	4.8E+00	
SVOC	Benzo(a)pyrene	50-32-8	2.5E+02	8.0E-01			2.7E+00	3.3E-01	3.0E-01	6.5E+00	
SVOC	Benzo(b)fluoranthene	205-99-2	2.5E+02	8.0E-01			2.7E+00	3.3E-01	3.0E-01	6.5E+00	
SVOC	Benzo(g,h,i)perylene	191-24-2	2.8E+02	7.0E-01			3.7E+00	3.3E-01	3.0E-01	8.9E+00	
SVOC	Chrysene	218-01-9	2.3E+02	9.0E-01			2.0E+00	3.3E-01	3.0E-01	4.8E+00	
SVOC	Ethanol	64-17-5	4.6E+01	1.0E+00	5.5E-04	1.4E-03	1.9E-01	3.3E-01	3.0E-01	4.6E-01	1.30E-06
SVOC	Fluorene	86-73-7	1.7E+02	1.0E+00			9.0E-01	3.3E-01	3.0E-01	2.2E+00	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.8E+02	7.0E-01			3.7E+00	3.3E-01	3.0E-01	8.9E+00	
SVOC	Naphthalene	91-20-3	1.3E+02	1.0E+00			5.5E-01	3.3E-01	3.0E-01	1.3E+00	
SVOC	Phenanthrene	85-01-8	1.8E+02	1.0E+00			1.0E+00	3.3E-01	3.0E-01	2.5E+00	
SVOC	Pyrene	129-00-0	2.0E+02	1.0E+00			1.4E+00	3.3E-01	3.0E-01	3.4E+00	
SVOC	Tetraethylene Glycol	112-60-7	1.9E+02	1.0E+00			1.3E+00	3.3E-01	3.0E-01	3.1E+00	
INORG	Lead	7439-92-1	2.1E+02		1.0E-04		1.5E+00	3.3E-01	3.0E-01	3.7E+00	2.00E-07

Notes:

Event Time hours t 2

K_p capped at 1 cm/hr (USEPA 1992).

The dermal absorbed dose for inorganic chemicals is estimated using a steady-state approach (USEPA 2004, Equation 3.4) and for organic chemicals is estimated using a nonsteady-state approach (USEPA 2004, Equations 3.2 and 3.3).

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Table 7a

Unit Risk Calculations for Exposure of Maintenance Workers to Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	C _{gw} (mg/l)	Incidental Ingestion			Dermal Contact				Vapor Inhalation			All Routes Risk
					LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	Risk	DA (L/cm ² -event)	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	Risk	C _{air} (mg/m ³)	URF (mg/m ³) ⁻¹	Risk	
VOC	Benzene	71-43-2	A	1.00E+00	7.34E-07	5.5E-02	4.0E-08	3.70E-05	9.57E-06	5.5E-02	5.3E-07	1.19E-01	7.8E-03	1.8E-06	2.4E-06
VOC	Cumene	98-82-8	D	1.00E+00	7.34E-07							9.64E-02			
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	7.34E-07	2.0E+00	1.5E-06	6.81E-06	1.76E-06	2.0E+00	3.5E-06	7.11E-02	6.0E-01	8.4E-05	8.9E-05
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	7.34E-07	9.1E-02	6.7E-08	1.13E-05	2.92E-06	9.1E-02	2.7E-07	9.88E-02	2.6E-02	5.0E-06	5.4E-06
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	7.34E-07			1.27E-04	3.28E-05			1.02E-01			
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	7.34E-07	1.8E-03	1.3E-09	8.84E-06	2.29E-06	1.8E-03	4.1E-09	9.99E-02	2.6E-04	5.1E-08	5.6E-08
VOC	Toluene	108-88-3	ID	1.00E+00	7.34E-07			8.08E-05	2.09E-05			1.09E-01			
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	7.34E-07							9.57E-02			
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	7.34E-07							9.56E-02			
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	7.34E-07			1.32E-04	3.41E-05			1.02E-01			
SVOC	Anthracene	120-12-7	ID	1.00E+00	7.34E-07							2.97E-02			
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00	7.34E-07	1.0E-01	7.3E-08			1.0E-01			6.0E-02		7.3E-08
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00	7.34E-07	1.0E+00	7.3E-07			1.0E+00			6.0E-01		7.3E-07
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00	7.34E-07	1.0E-01	7.3E-08			1.0E-01			6.0E-02		7.3E-08
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00	7.34E-07										
SVOC	Chrysene	218-01-9	B2	1.00E+00	7.34E-07	1.0E-03	7.3E-10			1.0E-03			6.0E-04		7.3E-10
SVOC	Ethanol	64-17-5		1.00E+00	7.34E-07			1.30E-06	3.36E-07						
SVOC	Fluorene	86-73-7	D	1.00E+00	7.34E-07							3.18E-02			
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00	7.34E-07	1.0E-01	7.3E-08			1.0E-01			6.0E-02		7.3E-08
SVOC	Naphthalene	91-20-3	C	1.00E+00	7.34E-07	1.2E-01	8.8E-08			1.2E-01		7.88E-02	3.4E-02	5.2E-06	5.3E-06
SVOC	Phenanthrene	85-01-8	D	1.00E+00	7.34E-07							3.11E-02			
SVOC	Pyrene	129-00-0	NC	1.00E+00	7.34E-07										
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00	7.34E-07										
INORG	Lead	7439-92-1	B2	1.00E+00	7.34E-07			2.00E-07	5.18E-08						

Attachment 3

Table 7b

Hazard Quotient Calculations for Exposure of Maintenance Workers to Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{gw} (mg/L)	Incidental Ingestion			Dermal Contact				Vapor Inhalation			All Routes
				ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	DA (L/cm ² -event)	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	HQ
VOC	Benzene	71-43-2	1.00E+00	5.14E-06	4.0E-03	1.3E-03	3.70E-05	6.70E-05	4.0E-03	1.7E-02	1.19E-01	3.0E-02	5.4E-02	7.2E-02
VOC	Cumene	98-82-8	1.00E+00	5.14E-06	1.0E-01	5.1E-05			1.0E-01		9.64E-02	4.0E-01	3.3E-03	3.4E-03
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	5.14E-06	9.0E-03	5.7E-04	6.81E-06	1.23E-05	9.0E-03	1.4E-03	7.11E-02	9.0E-03	1.1E-01	1.1E-01
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	5.14E-06	2.0E-02	2.6E-04	1.13E-05	2.05E-05	2.0E-02	1.0E-03	9.88E-02	7.0E-03	1.9E-01	1.9E-01
VOC	Ethyl Benzene	100-41-4	1.00E+00	5.14E-06	1.0E-01	5.1E-05	1.27E-04	2.30E-04	1.0E-01	2.3E-03	1.02E-01	1.0E+00	1.4E-03	3.7E-03
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	5.14E-06	3.0E-01	1.7E-05	8.84E-06	1.60E-05	3.0E-01	5.3E-05	9.99E-02	3.0E+00	4.6E-04	5.3E-04
VOC	Toluene	108-88-3	1.00E+00	5.14E-06	8.0E-02	6.4E-05	8.08E-05	1.46E-04	8.0E-02	1.8E-03	1.09E-01	5.0E+00	3.0E-04	2.2E-03
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	5.14E-06	1.0E-02	5.1E-04			1.0E-02		9.57E-02	6.0E-02	2.2E-02	2.2E-02
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	5.14E-06	1.0E-02	5.1E-04			1.0E-02		9.56E-02	6.0E-02	2.2E-02	2.2E-02
VOC	Xylenes (total)	1330-20-7	1.00E+00	5.14E-06	2.0E-01	2.6E-05	1.32E-04	2.39E-04	2.0E-01	1.2E-03	1.02E-01	1.0E-01	1.4E-02	1.5E-02
SVOC	Anthracene	120-12-7	1.00E+00	5.14E-06	3.0E-01	1.7E-05			3.0E-01		2.97E-02			1.7E-05
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00	5.14E-06										
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00	5.14E-06	3.0E-04	1.7E-02			3.0E-04			2.0E-06		1.7E-02
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00	5.14E-06										
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00	5.14E-06	3.0E-02	1.7E-04			3.0E-02					1.7E-04
SVOC	Chrysene	218-01-9	1.00E+00	5.14E-06										
SVOC	Ethanol	64-17-5	1.00E+00	5.14E-06	6.2E+01	8.3E-08	1.30E-06	2.35E-06	6.2E+01	3.8E-08		1.9E+01		1.2E-07
SVOC	Fluorene	86-73-7	1.00E+00	5.14E-06	4.0E-02	1.3E-04			4.0E-02		3.18E-02			1.3E-04
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00	5.14E-06										
SVOC	Naphthalene	91-20-3	1.00E+00	5.14E-06	2.0E-02	2.6E-04			2.0E-02		7.88E-02	3.0E-03	3.6E-01	3.6E-01
SVOC	Phenanthrene	85-01-8	1.00E+00	5.14E-06	3.0E-02	1.7E-04			3.0E-02		3.11E-02			1.7E-04
SVOC	Pyrene	129-00-0	1.00E+00	5.14E-06	3.0E-02	1.7E-04			3.0E-02					1.7E-04
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00	5.14E-06	2.0E+00	2.6E-06			2.0E+00					2.6E-06
INORG	Lead	7439-92-1	1.00E+00	5.14E-06			2.00E-07	3.62E-07						

Attachment 4

Construction Worker Risk Calculations

Table 1 – Normalized Average Vapor Flux from Soil to Outdoor Air

Table 2 – Dispersion Factor to Outdoor Air

Table 3 – Concentrations in Outdoor Air from Soil

Table 4a – Unit Risk Calculations for Exposure of Construction Workers to Soil

Table 4b – Unit Hazard Quotient Calculations for Exposure of Construction Workers to Soil

Table 5 – Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Table 6 – Dermal Absorbed Dose for Groundwater

Table 7a – Unit Risk Calculations for Exposure of Construction Workers to Groundwater in Excavations

Table 7b – Unit Hazard Quotient Calculations for Exposure of Construction Workers to Groundwater in Excavations



Attachment 4

Table 1

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	D _{air} (m ² /d)	D _{water} (m ² /d)	D _G (m ² /d)	D _L (m ² /d)	D _E (m ² /d)	J _v (kg/m ² -s)
VOC	Benzene	71-43-2	5.82E+01		1.68E-01	7.60E-01	8.47E-05	1.23E-01	3.46E-08	3.51E-02	1.79E-04
VOC	Cumene	98-82-8	7.05E+02		3.28E-01	5.62E-01	6.13E-05	9.10E-02	2.51E-08	4.96E-03	7.98E-05
VOC	1,2-Dibromoethane	106-93-4	2.22E+01		2.37E-02	3.72E-01	7.29E-05	6.02E-02	2.98E-08	5.83E-03	8.65E-05
VOC	1,2-Dichloroethane	107-06-2	1.75E+01		2.92E-02	8.99E-01	8.55E-05	1.46E-01	3.50E-08	2.04E-02	1.50E-04
VOC	Ethyl Benzene	100-41-4	3.67E+02		2.20E-01	6.48E-01	6.74E-05	1.05E-01	2.76E-08	7.27E-03	9.63E-05
VOC	Methyl tert-butyl ether	1634-04-4	1.15E+01		1.83E-02	7.42E-01	8.73E-05	1.20E-01	3.57E-08	1.43E-02	1.31E-04
VOC	Toluene	108-88-3	1.80E+02		1.93E-01	7.52E-01	7.43E-05	1.22E-01	3.04E-08	1.46E-02	1.32E-04
VOC	1,2,4-Trimethylbenzene	95-63-6	8.97E+02		1.61E-01	5.24E-01	6.84E-05	8.48E-02	2.80E-08	1.81E-03	4.83E-05
VOC	1,3,5-Trimethylbenzene	108-67-8	1.76E+03		1.54E-01	5.20E-01	7.49E-05	8.42E-02	3.06E-08	8.81E-04	3.37E-05
VOC	Xylenes (total)	1330-20-7	3.86E+02		2.52E-01	6.74E-01	7.56E-05	1.09E-01	3.09E-08	8.23E-03	1.02E-04
SVOC	Anthracene	120-12-7	2.97E+04		1.30E-03	2.80E-01	6.69E-05	4.53E-02	2.74E-08	2.40E-07	5.56E-07
SVOC	Benzo(a)anthracene	56-55-3	4.01E+05		5.55E-05	4.41E-01	7.78E-05	7.14E-02	3.18E-08	1.20E-09	
SVOC	Benzo(a)pyrene	50-32-8	1.01E+06		1.49E-05	3.72E-01	7.78E-05	6.02E-02	3.18E-08	1.11E-10	
SVOC	Benzo(b)fluoranthene	205-99-2	1.24E+06		1.66E-03	1.95E-01	4.80E-05	3.16E-02	1.97E-08	5.08E-09	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.28E+07		1.10E-05	1.88E-01	4.54E-05	3.04E-02	1.86E-08	3.32E-12	
SVOC	Chrysene	218-01-9	4.01E+05		1.48E-03	2.14E-01	5.37E-05	3.47E-02	2.20E-08	1.54E-08	
SVOC	Ethanol	64-17-5	6.81E-01		1.75E-04	1.06E+00	1.12E-04	1.72E-01	4.60E-08	5.09E-04	
SVOC	Fluorene	86-73-7	1.38E+04		1.39E-03	3.14E-01	6.81E-05	5.08E-02	2.79E-08	6.17E-07	8.91E-07
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.45E+06		2.03E-05	1.64E-01	4.89E-05	2.66E-02	2.00E-08	1.96E-11	
SVOC	Naphthalene	91-20-3	2.01E+03		1.20E-02	5.10E-01	6.48E-05	8.26E-02	2.65E-08	5.94E-05	8.75E-06
SVOC	Phenanthrene	85-01-8	2.42E+04		1.41E-03	3.24E-01	6.45E-05	5.25E-02	2.64E-08	3.67E-07	6.87E-07
SVOC	Pyrene	129-00-0	1.06E+05		2.00E-04	2.35E-01	6.26E-05	3.81E-02	2.56E-08	8.73E-09	
SVOC	Tetraethylene Glycol	112-60-7	3.00E-02		1.62E-11	4.39E-01	6.96E-05	7.11E-02	2.85E-08	5.30E-07	
INORG	Lead	7439-92-1		9.00E+02							

Attachment 4

Table 1

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

Soil bulk density	kg/L	ρ_b	1.66
Soil porosity	L/L-soil	θ	0.38
Soil water content	L/L-soil	θ_w	0.05
Soil air-filled porosity	L/L-soil	θ_a	0.32
Soil organic carbon fraction	unitless	f_{oc}	0.005
Averaging period (Exposure Duration)	years	T	1
	days	T	365
Temperature	$^{\circ}\text{C}$	Temp	18
Clean soil above source	m	Z_1	
Bottom of source depth	m	Z_2	5.79

Based on the volatilization model developed by Jury et. al. (1983) for finite sources as described in USEPA's (1996) Soil Screening Guidance: Technical Background Document. The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 4

Table 2

Dispersion Factor to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Parameter	Units	Value
Correlation coefficient city		Philadelphia
Correlation coefficient A		14.0111
Correlation coefficient B		19.6154
Correlation coefficient C		225.3397

Soil source area	acres	70.6
		Annual
Soil C/Q averaging time		Max
Conversion factor from 1-Hr Max for soil		0.19
C/Q for soil	(kg/m³)/(kg/m²-s)	25.06

Groundwater source area	acres	0.0052
		24-Hour
Groundwater averaging time for C/Q		Max
Conversion factor from 1-Hr Max for groundwater		0.40
C/Q for Groundwater	(L/m³)/(L/m²-s)	9.63

Note:

C/Q is estimated using the empirical correlation in USEPA's (2002) Supplemental Soil Screening Guidance.

Attachment 4

Table 3

Concentrations in Outdoor Air from Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Chem	Chemical	CASRN	Vapor		PM ₁₀	
			C _{soil} (mg/kg)	C _{air} (mg/m ³)	C _{soil} (mg/kg)	C _{air} (mg/m ³)
			C/Q (kg/m ³ per kg/m ² -s): 2.5E+01			
VOC	Benzene	71-43-2	1.00E+00	4.49E-03	1.00E+00	5.00E-08
VOC	Cumene	98-82-8	1.00E+00	2.00E-03	1.00E+00	5.00E-08
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	2.17E-03	1.00E+00	5.00E-08
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	3.76E-03	1.00E+00	5.00E-08
VOC	Ethyl Benzene	100-41-4	1.00E+00	2.41E-03	1.00E+00	5.00E-08
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	3.27E-03	1.00E+00	5.00E-08
VOC	Toluene	108-88-3	1.00E+00	3.30E-03	1.00E+00	5.00E-08
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	1.21E-03	1.00E+00	5.00E-08
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	8.44E-04	1.00E+00	5.00E-08
VOC	Xylenes (total)	1330-20-7	1.00E+00	2.56E-03	1.00E+00	5.00E-08
SVOC	Anthracene	120-12-7	1.00E+00	1.39E-05	1.00E+00	5.00E-08
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		1.00E+00	5.00E-08
SVOC	Chrysene	218-01-9	1.00E+00		1.00E+00	5.00E-08
SVOC	Ethanol	64-17-5	1.00E+00		1.00E+00	5.00E-08
SVOC	Fluorene	86-73-7	1.00E+00	2.23E-05	1.00E+00	5.00E-08
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		1.00E+00	5.00E-08
SVOC	Naphthalene	91-20-3	1.00E+00	2.19E-04	1.00E+00	5.00E-08
SVOC	Phenanthrene	85-01-8	1.00E+00	1.72E-05	1.00E+00	5.00E-08
SVOC	Pyrene	129-00-0	1.00E+00		1.00E+00	5.00E-08
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		1.00E+00	5.00E-08
INORG	Lead	7439-92-1	1.00E+00		1.00E+00	5.00E-08

Attachment 4

Table 4a

Unit Risk Calculations for Exposure of Construction Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	C _{soil} (mg/kg)	Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes Risk
					RBA	LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	Risk	ABS _{derm}	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	Risk	C _{air} (mg/m ³)	URF (m ³ /mg)	Risk	C _{air} (mg/m ³)	URF (mg/m ³) ⁻¹	Risk	
VOC	Benzene	71-43-2	A	1.00E+00		2.45E-08	5.5E-02	1.3E-09			5.5E-02		4.49E-03	7.8E-03	1.1E-07	5.00E-08	7.8E-03	1.3E-12	1.2E-07
VOC	Cumene	98-82-8	D	1.00E+00		2.45E-08							2.00E-03			5.00E-08			
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00		2.45E-08	2.0E+00	4.9E-08			2.0E+00		2.17E-03	6.0E-01	4.2E-06	5.00E-08	6.0E-01	9.8E-11	4.3E-06
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00		2.45E-08	9.1E-02	2.2E-09			9.1E-02		3.76E-03	2.6E-02	3.2E-07	5.00E-08	2.6E-02	4.2E-12	3.2E-07
VOC	Ethyl Benzene	100-41-4	D	1.00E+00		2.45E-08							2.41E-03			5.00E-08			
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00		2.45E-08	1.8E-03	4.4E-11			1.8E-03		3.27E-03	2.6E-04	2.8E-09	5.00E-08	2.6E-04	4.2E-14	2.8E-09
VOC	Toluene	108-88-3	ID	1.00E+00		2.45E-08							3.30E-03			5.00E-08			
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00		2.45E-08							1.21E-03			5.00E-08			
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00		2.45E-08							8.44E-04			5.00E-08			
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00		2.45E-08							2.56E-03			5.00E-08			
SVOC	Anthracene	120-12-7	ID	1.00E+00		2.45E-08			1.30E-01	6.73E-09			1.39E-05			5.00E-08			
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		2.45E-08	1.0E-01	2.4E-09	1.30E-01	6.73E-09	1.0E-01	6.7E-10		6.0E-02		5.00E-08	6.0E-02	9.8E-12	3.1E-09
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		2.45E-08	1.0E+00	2.4E-08	1.30E-01	6.73E-09	1.0E+00	6.7E-09		6.0E-01		5.00E-08	6.0E-01	9.8E-11	3.1E-08
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		2.45E-08	1.0E-01	2.4E-09	1.30E-01	6.73E-09	1.0E-01	6.7E-10		6.0E-02		5.00E-08	6.0E-02	9.8E-12	3.1E-09
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00		2.45E-08			1.30E-01	6.73E-09						5.00E-08			
SVOC	Chrysene	218-01-9	B2	1.00E+00		2.45E-08	1.0E-03	2.4E-11	1.30E-01	6.73E-09	1.0E-03	6.7E-12		6.0E-04		5.00E-08	6.0E-04	9.8E-14	3.1E-11
SVOC	Ethanol	64-17-5		1.00E+00		2.45E-08										5.00E-08			
SVOC	Fluorene	86-73-7	D	1.00E+00		2.45E-08			1.30E-01	6.73E-09			2.23E-05			5.00E-08			
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		2.45E-08	1.0E-01	2.4E-09	1.30E-01	6.73E-09	1.0E-01	6.7E-10		6.0E-02		5.00E-08	6.0E-02	9.8E-12	3.1E-09
SVOC	Naphthalene	91-20-3	C	1.00E+00		2.45E-08	1.2E-01	2.9E-09	1.30E-01	6.73E-09	1.2E-01	8.1E-10	2.19E-04	3.4E-02	2.4E-08	5.00E-08	3.4E-02	5.5E-12	2.8E-08
SVOC	Phenanthrene	85-01-8	D	1.00E+00		2.45E-08			1.30E-01	6.73E-09			1.72E-05			5.00E-08			
SVOC	Pyrene	129-00-0	NC	1.00E+00		2.45E-08			1.30E-01	6.73E-09						5.00E-08			
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00		2.45E-08			1.00E-01	5.18E-09						5.00E-08			
INORG	Lead	7439-92-1	B2	1.00E+00		2.45E-08										5.00E-08			

Notes:

The concentration of particulates in the air is assumed to be no more than the former annual National Ambient Air Quality Standards (NAAQS) for PM₁₀ of 50 ug/m³.

Attachment 4

Table 4b

Unit Hazard Quotient Calculations for Exposure of Construction Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{soil} (mg/kg)	Soil Ingestion				Soil Dermal Contact				Soil Vapor Inhalation			Soil Particulate Inhalation			All Routes	
				RBA	ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	ABS _{derm}	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	HQ	
VOC	Benzene	71-43-2	1.00E+00		1.71E-06	1.0E-02	1.7E-04			1.0E-02			4.49E-03	9.0E-02	1.1E-02	5.00E-08	9.0E-02	1.3E-07	1.2E-02
VOC	Cumene	98-82-8	1.00E+00		1.71E-06	4.0E-01	4.3E-06			4.0E-01			2.00E-03	4.0E-01	1.1E-03	5.00E-08	4.0E-01	2.9E-08	1.1E-03
VOC	1,2-Dibromoethane	106-93-4	1.00E+00		1.71E-06	9.0E-03	1.9E-04			9.0E-03			2.17E-03	9.0E-03	5.5E-02	5.00E-08	9.0E-03	1.3E-06	5.5E-02
VOC	1,2-Dichloroethane	107-06-2	1.00E+00		1.71E-06	2.0E-02	8.6E-05			2.0E-02			3.76E-03	7.0E-02	1.2E-02	5.00E-08	7.0E-02	1.6E-07	1.2E-02
VOC	Ethyl Benzene	100-41-4	1.00E+00		1.71E-06	1.0E-01	1.7E-05			1.0E-01			2.41E-03	9.0E+00	6.1E-05	5.00E-08	9.0E+00	1.3E-09	7.8E-05
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00		1.71E-06	3.0E-01	5.7E-06			3.0E-01			3.27E-03	3.0E+00	2.5E-04	5.00E-08	3.0E+00	3.8E-09	2.5E-04
VOC	Toluene	108-88-3	1.00E+00		1.71E-06	8.0E-01	2.1E-06			8.0E-01			3.30E-03	5.0E+00	1.5E-04	5.00E-08	5.0E+00	2.3E-09	1.5E-04
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00		1.71E-06	4.0E-02	4.3E-05			4.0E-02			1.21E-03	2.0E-01	1.4E-03	5.00E-08	2.0E-01	5.7E-08	1.4E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00		1.71E-06	4.0E-02	4.3E-05			4.0E-02			8.44E-04	2.0E-01	9.6E-04	5.00E-08	2.0E-01	5.7E-08	1.0E-03
VOC	Xylenes (total)	1330-20-7	1.00E+00		1.71E-06	2.0E-01	8.6E-06			2.0E-01			2.56E-03	3.0E-01	1.9E-03	5.00E-08	3.0E-01	3.8E-08	2.0E-03
SVOC	Anthracene	120-12-7	1.00E+00		1.71E-06	1.0E+00	1.7E-06	1.30E-01	4.71E-07	1.0E+00	4.7E-07		1.39E-05			5.00E-08			2.2E-06
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		1.71E-06			1.30E-01	4.71E-07							5.00E-08			
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		1.71E-06	3.0E-04	5.7E-03	1.30E-01	4.71E-07	3.0E-04	1.6E-03			2.0E-06		5.00E-08	2.0E-06	5.7E-03	1.3E-02
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		1.71E-06			1.30E-01	4.71E-07							5.00E-08			
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		1.71E-06	3.0E-01	5.7E-06	1.30E-01	4.71E-07	3.0E-01	1.6E-06					5.00E-08			7.3E-06
SVOC	Chrysene	218-01-9	1.00E+00		1.71E-06			1.30E-01	4.71E-07							5.00E-08			
SVOC	Ethanol	64-17-5	1.00E+00		1.71E-06	6.2E+01	2.8E-08			6.2E+01				1.9E+01		5.00E-08	1.9E+01	6.0E-10	2.8E-08
SVOC	Fluorene	86-73-7	1.00E+00		1.71E-06	4.0E-01	4.3E-06	1.30E-01	4.71E-07	4.0E-01	1.2E-06		2.23E-05			5.00E-08			5.5E-06
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		1.71E-06			1.30E-01	4.71E-07							5.00E-08			
SVOC	Naphthalene	91-20-3	1.00E+00		1.71E-06	2.0E-01	8.6E-06	1.30E-01	4.71E-07	2.0E-01	2.4E-06		2.19E-04	3.0E-03	1.7E-02	5.00E-08	3.0E-03	3.8E-06	1.7E-02
SVOC	Phenanthrene	85-01-8	1.00E+00		1.71E-06	3.0E-01	5.7E-06	1.30E-01	4.71E-07	3.0E-01	1.6E-06		1.72E-05			5.00E-08			7.3E-06
SVOC	Pyrene	129-00-0	1.00E+00		1.71E-06	3.0E-01	5.7E-06	1.30E-01	4.71E-07	3.0E-01	1.6E-06					5.00E-08			7.3E-06
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		1.71E-06	2.0E+00	8.6E-07	1.00E-01	3.62E-07	2.0E+00	1.8E-07					5.00E-08			1.0E-06
INORG	Lead	7439-92-1	1.00E+00		1.71E-06											5.00E-08			

Notes:

The concentration of particulates in the air is assumed to be no more than the former annual National Ambient Air Quality Standards (NAAQS) for PM₁₀ of 50 ug/m³.

Attachment 4

Table 5

Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	H (unitless)	MW (g/mol)	k_G (cm/s)	k_L (cm/s)	$1/K_L$ (s/cm)	K_L (cm/s)	J_L (L/m ² -s)
VOC	Benzene	71-43-2	1.7E-01	7.8E+01	4.97E-01	1.25E-03	8.12E+02	1.23E-03	1.23E-02
VOC	Cumene	98-82-8	3.3E-01	1.2E+02	4.31E-01	1.01E-03	9.99E+02	1.00E-03	1.00E-02
VOC	1,2-Dibromoethane	106-93-4	2.4E-02	1.9E+02	3.71E-01	8.06E-04	1.35E+03	7.38E-04	7.38E-03
VOC	1,2-Dichloroethane	107-06-2	2.9E-02	9.9E+01	4.60E-01	1.11E-03	9.75E+02	1.03E-03	1.03E-02
VOC	Ethyl Benzene	100-41-4	2.2E-01	1.1E+02	4.49E-01	1.07E-03	9.43E+02	1.06E-03	1.06E-02
VOC	Methyl tert-butyl ether	1634-04-4	1.8E-02	8.8E+01	4.78E-01	1.18E-03	9.64E+02	1.04E-03	1.04E-02
VOC	Toluene	108-88-3	1.9E-01	9.2E+01	4.71E-01	1.15E-03	8.80E+02	1.14E-03	1.14E-02
VOC	1,2,4-Trimethylbenzene	95-63-6	1.6E-01	1.2E+02	4.31E-01	1.01E-03	1.01E+03	9.93E-04	9.93E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	1.5E-01	1.2E+02	4.31E-01	1.01E-03	1.01E+03	9.93E-04	9.93E-03
VOC	Xylenes (total)	1330-20-7	2.5E-01	1.1E+02	4.49E-01	1.07E-03	9.42E+02	1.06E-03	1.06E-02
SVOC	Anthracene	120-12-7	1.3E-03	1.8E+02	3.77E-01	8.28E-04	3.24E+03	3.09E-04	3.09E-03
SVOC	Benzo(a)anthracene	56-55-3	5.6E-05	2.3E+02	3.47E-01	7.31E-04	5.32E+04	1.88E-05	
SVOC	Benzo(a)pyrene	50-32-8	1.5E-05	2.5E+02	3.36E-01	6.96E-04	2.01E+05	4.98E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	1.7E-03	2.5E+02	3.36E-01	6.96E-04	3.23E+03	3.09E-04	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.1E-05	2.8E+02	3.26E-01	6.65E-04	2.81E+05	3.56E-06	
SVOC	Chrysene	218-01-9	1.5E-03	2.3E+02	3.47E-01	7.31E-04	3.31E+03	3.02E-04	
SVOC	Ethanol	64-17-5	1.7E-04	4.6E+01	5.94E-01	1.63E-03	1.02E+04	9.76E-05	
SVOC	Fluorene	86-73-7	1.4E-03	1.7E+02	3.86E-01	8.57E-04	3.03E+03	3.30E-04	3.30E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.0E-05	2.8E+02	3.26E-01	6.65E-04	1.53E+05	6.54E-06	
SVOC	Naphthalene	91-20-3	1.2E-02	1.3E+02	4.21E-01	9.76E-04	1.22E+03	8.18E-04	8.18E-03
SVOC	Phenanthrene	85-01-8	1.4E-03	1.8E+02	3.77E-01	8.28E-04	3.09E+03	3.23E-04	3.23E-03
SVOC	Pyrene	129-00-0	2.0E-04	2.0E+02	3.62E-01	7.77E-04	1.51E+04	6.62E-05	
SVOC	Tetraethylene Glycol	112-60-7	1.6E-11	1.9E+02	3.67E-01	7.93E-04	1.68E+11	5.95E-12	
INORG	Lead	7439-92-1		2.1E+02	3.59E-01	7.68E-04			

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Table 5

Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Molecular Weight of Oxygen	g/mol	MW_{O2}	32
Molecular Weight of Water	g/mol	MW_{H2O}	18
Temperature	K	Temp	291
Liquid-phase Mass Transfer Coefficient for Oxygen	cm/s	k_{L,O2}	0.002
Gas-Phase Mass Transfer Coefficient for Water Vapor at 25 °C	cm/s (L/m ³) /	K_{G,H2O}	0.833
Dispersion coefficient	(L/m ² /s)	C/Q	9.6

Attachment 4

Table 6

Dermal Absorbed Dose for Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	MW (g/mole)	FA (unitless)	K _p (cm/hr)	B (unitless)	t (hr)	c	b	ts (hr)	DA (L/cm ² -event)
VOC	Benzene	71-43-2	7.8E+01	1.0E+00	1.5E-02	5.0E-02	2.9E-01	3.7E-01	3.3E-01	6.9E-01	3.70E-05
VOC	Cumene	98-82-8	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	1,2-Dibromoethane	106-93-4	1.9E+02	1.0E+00	1.6E-03	8.4E-03	1.2E+00	3.4E-01	3.1E-01	2.8E+00	6.81E-06
VOC	1,2-Dichloroethane	107-06-2	9.9E+01	1.0E+00	4.1E-03	1.6E-02	3.8E-01	3.4E-01	3.1E-01	9.0E-01	1.13E-05
VOC	Ethyl Benzene	100-41-4	1.1E+02	1.0E+00	4.8E-02	1.9E-01	4.1E-01	4.7E-01	4.3E-01	9.9E-01	1.27E-04
VOC	Methyl tert-butyl ether	1634-04-4	8.8E+01	1.0E+00	3.3E-03	1.2E-02	3.3E-01	3.4E-01	3.1E-01	7.9E-01	8.84E-06
VOC	Toluene	108-88-3	9.2E+01	1.0E+00	3.2E-02	1.2E-01	3.5E-01	4.2E-01	3.8E-01	8.3E-01	8.08E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	1,3,5-Trimethylbenzene	108-67-8	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	Xylenes (total)	1330-20-7	1.1E+02	1.0E+00	5.0E-02	2.0E-01	4.1E-01	4.8E-01	4.4E-01	9.9E-01	1.32E-04
SVOC	Anthracene	120-12-7	1.8E+02	1.0E+00			1.0E+00	3.3E-01	3.0E-01	2.5E+00	
SVOC	Benzo(a)anthracene	56-55-3	2.3E+02	9.0E-01			2.0E+00	3.3E-01	3.0E-01	4.8E+00	
SVOC	Benzo(a)pyrene	50-32-8	2.5E+02	8.0E-01			2.7E+00	3.3E-01	3.0E-01	6.5E+00	
SVOC	Benzo(b)fluoranthene	205-99-2	2.5E+02	8.0E-01			2.7E+00	3.3E-01	3.0E-01	6.5E+00	
SVOC	Benzo(g,h,i)perylene	191-24-2	2.8E+02	7.0E-01			3.7E+00	3.3E-01	3.0E-01	8.9E+00	
SVOC	Chrysene	218-01-9	2.3E+02	9.0E-01			2.0E+00	3.3E-01	3.0E-01	4.8E+00	
SVOC	Ethanol	64-17-5	4.6E+01	1.0E+00	5.5E-04	1.4E-03	1.9E-01	3.3E-01	3.0E-01	4.6E-01	1.30E-06
SVOC	Fluorene	86-73-7	1.7E+02	1.0E+00			9.0E-01	3.3E-01	3.0E-01	2.2E+00	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.8E+02	7.0E-01			3.7E+00	3.3E-01	3.0E-01	8.9E+00	
SVOC	Naphthalene	91-20-3	1.3E+02	1.0E+00			5.5E-01	3.3E-01	3.0E-01	1.3E+00	
SVOC	Phenanthrene	85-01-8	1.8E+02	1.0E+00			1.0E+00	3.3E-01	3.0E-01	2.5E+00	
SVOC	Pyrene	129-00-0	2.0E+02	1.0E+00			1.4E+00	3.3E-01	3.0E-01	3.4E+00	
SVOC	Tetraethylene Glycol	112-60-7	1.9E+02	1.0E+00			1.3E+00	3.3E-01	3.0E-01	3.1E+00	
INORG	Lead	7439-92-1	2.1E+02		1.0E-04		1.5E+00	3.3E-01	3.0E-01	3.7E+00	2.00E-07

Notes:

Event Time hours t 2

K_p capped at 1 cm/hr (USEPA 1992).

The dermal absorbed dose for inorganic chemicals is estimated using a steady-state approach (USEPA 2004, Equation 3.4) and for organic chemicals is estimated using a nonsteady-state approach (USEPA 2004, Equations 3.2 and 3.3).

Attachment 4

Table 7a

Unit Risk Calculations for Exposure of Construction Workers to Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	C _{gw} (mg/l)	Incidental Ingestion			Dermal Contact				Vapor Inhalation			All Routes Risk
					LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	Risk	DA (L/cm ² -event)	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	Risk	C _{air} (mg/m ³)	URF (mg/m ³) ⁻¹	Risk	
VOC	Benzene	71-43-2	A	1.00E+00	7.34E-08	5.5E-02	4.0E-09	3.70E-05	9.57E-07	5.5E-02	5.3E-08	1.19E-01	7.8E-03	1.8E-07	2.4E-07
VOC	Cumene	98-82-8	D	1.00E+00	7.34E-08							9.64E-02			
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	7.34E-08	2.0E+00	1.5E-07	6.81E-06	1.76E-07	2.0E+00	3.5E-07	7.11E-02	6.0E-01	8.4E-06	8.9E-06
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	7.34E-08	9.1E-02	6.7E-09	1.13E-05	2.92E-07	9.1E-02	2.7E-08	9.88E-02	2.6E-02	5.0E-07	5.4E-07
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	7.34E-08			1.27E-04	3.28E-06			1.02E-01			
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	7.34E-08	1.8E-03	1.3E-10	8.84E-06	2.29E-07	1.8E-03	4.1E-10	9.99E-02	2.6E-04	5.1E-09	5.6E-09
VOC	Toluene	108-88-3	ID	1.00E+00	7.34E-08			8.08E-05	2.09E-06			1.09E-01			
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	7.34E-08							9.57E-02			
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	7.34E-08							9.56E-02			
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	7.34E-08			1.32E-04	3.41E-06			1.02E-01			
SVOC	Anthracene	120-12-7	ID	1.00E+00	7.34E-08							2.97E-02			
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00	7.34E-08	1.0E-01	7.3E-09			1.0E-01			6.0E-02		7.3E-09
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00	7.34E-08	1.0E+00	7.3E-08			1.0E+00			6.0E-01		7.3E-08
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00	7.34E-08	1.0E-01	7.3E-09			1.0E-01			6.0E-02		7.3E-09
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00	7.34E-08										
SVOC	Chrysene	218-01-9	B2	1.00E+00	7.34E-08	1.0E-03	7.3E-11			1.0E-03			6.0E-04		7.3E-11
SVOC	Ethanol	64-17-5		1.00E+00	7.34E-08			1.30E-06	3.36E-08						
SVOC	Fluorene	86-73-7	D	1.00E+00	7.34E-08							3.18E-02			
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00	7.34E-08	1.0E-01	7.3E-09			1.0E-01			6.0E-02		7.3E-09
SVOC	Naphthalene	91-20-3	C	1.00E+00	7.34E-08	1.2E-01	8.8E-09			1.2E-01		7.88E-02	3.4E-02	5.2E-07	5.3E-07
SVOC	Phenanthrene	85-01-8	D	1.00E+00	7.34E-08							3.11E-02			
SVOC	Pyrene	129-00-0	NC	1.00E+00	7.34E-08										
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00	7.34E-08										
INORG	Lead	7439-92-1	B2	1.00E+00	7.34E-08			2.00E-07	5.18E-09						

Attachment 4

Table 7b

Hazard Quotient Calculations for Exposure of Construction Workers to Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{gw} (mg/L)	Incidental Ingestion			Dermal Contact				Vapor Inhalation			All Routes
				ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	DA (L/cm ² - event)	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	HQ
VOC	Benzene	71-43-2	1.00E+00	5.14E-06	1.0E-02	5.1E-04	3.70E-05	6.70E-05	1.0E-02	6.7E-03	1.19E-01	9.0E-02	1.8E-02	2.5E-02
VOC	Cumene	98-82-8	1.00E+00	5.14E-06	4.0E-01	1.3E-05			4.0E-01		9.64E-02	4.0E-01	3.3E-03	3.3E-03
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	5.14E-06	9.0E-03	5.7E-04	6.81E-06	1.23E-05	9.0E-03	1.4E-03	7.11E-02	9.0E-03	1.1E-01	1.1E-01
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	5.14E-06	2.0E-02	2.6E-04	1.13E-05	2.05E-05	2.0E-02	1.0E-03	9.88E-02	7.0E-02	1.9E-02	2.1E-02
VOC	Ethyl Benzene	100-41-4	1.00E+00	5.14E-06	1.0E-01	5.1E-05	1.27E-04	2.30E-04	1.0E-01	2.3E-03	1.02E-01	9.0E+00	1.6E-04	2.5E-03
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	5.14E-06	3.0E-01	1.7E-05	8.84E-06	1.60E-05	3.0E-01	5.3E-05	9.99E-02	3.0E+00	4.6E-04	5.3E-04
VOC	Toluene	108-88-3	1.00E+00	5.14E-06	8.0E-01	6.4E-06	8.08E-05	1.46E-04	8.0E-01	1.8E-04	1.09E-01	5.0E+00	3.0E-04	4.9E-04
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	5.14E-06	4.0E-02	1.3E-04			4.0E-02		9.57E-02	2.0E-01	6.6E-03	6.7E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	5.14E-06	4.0E-02	1.3E-04			4.0E-02		9.56E-02	2.0E-01	6.5E-03	6.7E-03
VOC	Xylenes (total)	1330-20-7	1.00E+00	5.14E-06	2.0E-01	2.6E-05	1.32E-04	2.39E-04	2.0E-01	1.2E-03	1.02E-01	3.0E-01	4.7E-03	5.9E-03
SVOC	Anthracene	120-12-7	1.00E+00	5.14E-06	1.0E+00	5.1E-06			1.0E+00		2.97E-02			5.1E-06
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00	5.14E-06										
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00	5.14E-06	3.0E-04	1.7E-02			3.0E-04			2.0E-06		1.7E-02
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00	5.14E-06										
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00	5.14E-06	3.0E-01	1.7E-05			3.0E-01					1.7E-05
SVOC	Chrysene	218-01-9	1.00E+00	5.14E-06										
SVOC	Ethanol	64-17-5	1.00E+00	5.14E-06	6.2E+01	8.3E-08	1.30E-06	2.35E-06	6.2E+01	3.8E-08		1.9E+01		1.2E-07
SVOC	Fluorene	86-73-7	1.00E+00	5.14E-06	4.0E-01	1.3E-05			4.0E-01		3.18E-02			1.3E-05
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00	5.14E-06										
SVOC	Naphthalene	91-20-3	1.00E+00	5.14E-06	2.0E-01	2.6E-05			2.0E-01		7.88E-02	3.0E-03	3.6E-01	3.6E-01
SVOC	Phenanthrene	85-01-8	1.00E+00	5.14E-06	3.0E-01	1.7E-05			3.0E-01		3.11E-02			1.7E-05
SVOC	Pyrene	129-00-0	1.00E+00	5.14E-06	3.0E-01	1.7E-05			3.0E-01					1.7E-05
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00	5.14E-06	2.0E+00	2.6E-06			2.0E+00					2.6E-06
INORG	Lead	7439-92-1	1.00E+00	5.14E-06			2.00E-07	3.62E-07						

Attachment 5

Off-Site Resident Risk Calculations

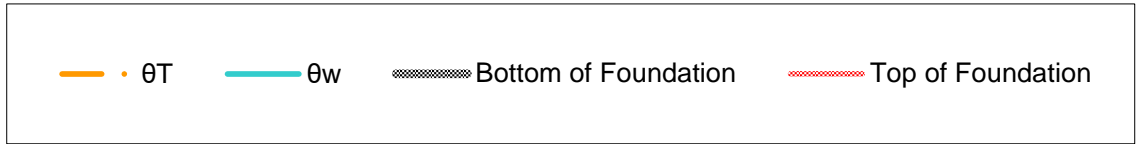
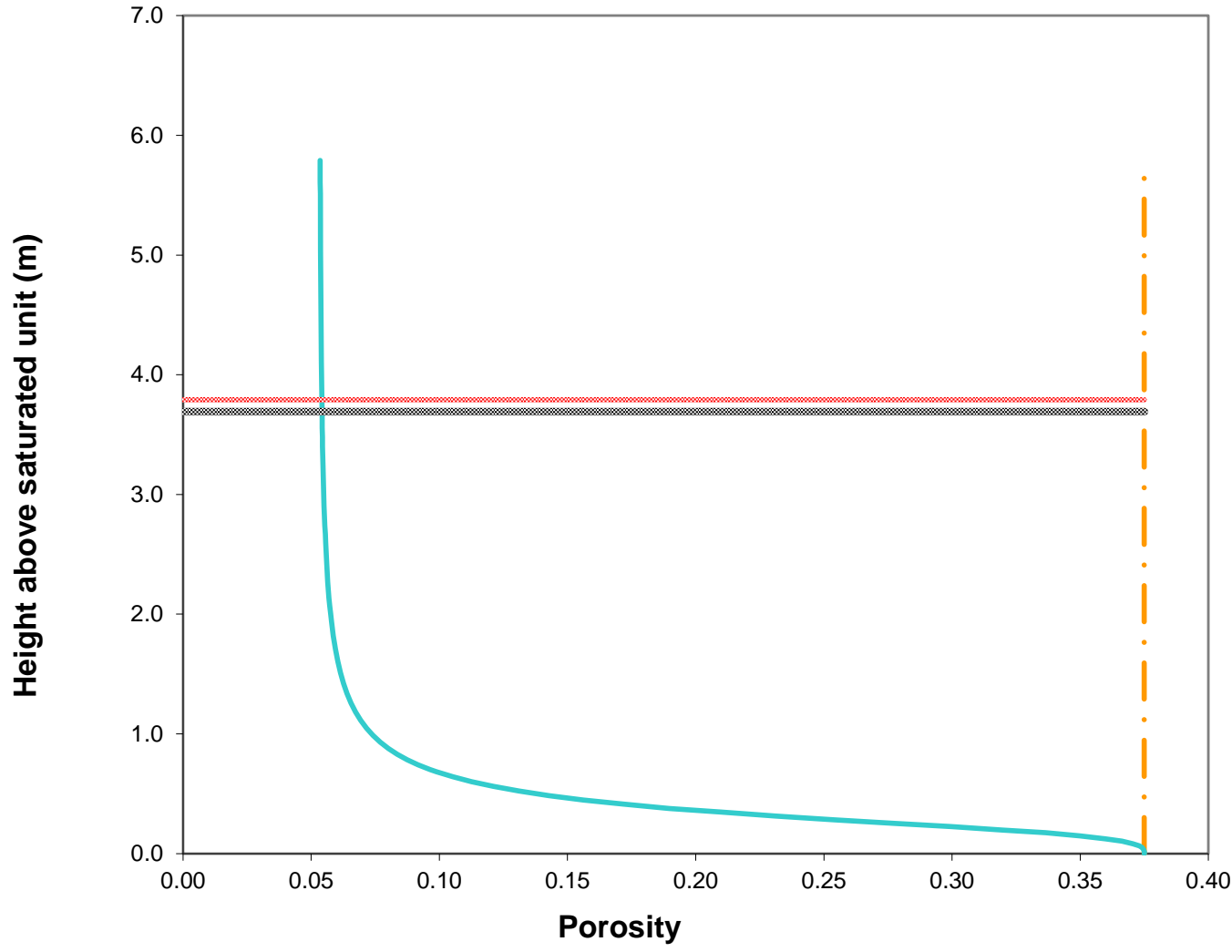
Figure 1 – Soil Moisture Profile for Default PADEP Residential Building (w/ Basement)

Table 1 – Normalized Indoor Air Concentrations in a Default PADEP Residential Building (with Basement)
Due to Vapor Intrusion from Groundwater

Table 2 – Unit Risk and Hazard Quotient Calculations for Groundwater Vapor Intrusion into a Default
PADEP Residential Building (with Basement)



Attachment 5
Figure 1: Soil Moisture Profile for Default PADEP Residential Building (w/ Basement)
PESRM Philadelphia Refining Complex, Philadelphia, Pennsylvania



Attachment 5

Table 1

Normalized Indoor Air Concentration in a Default PADEP Residential Building (w/ Basement) Due to Vapor Intrusion from Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	D _{air} (m ² /day)	D _{water} (m ² /day)	H (unitless)	D _{crack} (m ² /day)	D _{eff} ^T (m ² /day)	α _{soil}	α _{slab}	α _∞	C _{b, norm} (L-water/m ³)
VOC	Benzene	71-43-2	7.60E-01	8.47E-05	1.68E-01	1.23E-01	2.49E-03	1.66E-02	4.55E-03	7.55E-05	1.27E-02
VOC	Cumene	98-82-8	5.62E-01	6.13E-05	3.28E-01	9.06E-02	1.03E-03	6.94E-03	4.55E-03	3.16E-05	1.04E-02
VOC	1,2-Dibromoethane	106-93-4	3.72E-01	7.29E-05	2.37E-02	5.99E-02	8.50E-03	5.45E-02	4.55E-03	2.48E-04	5.89E-03
VOC	1,2-Dichloroethane	107-06-2	8.99E-01	8.55E-05	2.92E-02	1.45E-01	1.06E-02	6.68E-02	4.55E-03	3.04E-04	8.87E-03
VOC	Ethyl Benzene	100-41-4	6.48E-01	6.74E-05	2.20E-01	1.05E-01	1.60E-03	1.07E-02	4.55E-03	4.89E-05	1.07E-02
VOC	Methyl tert-butyl ether	1634-04-4	7.42E-01	8.73E-05	1.83E-02	1.20E-01	1.43E-02	8.81E-02	4.55E-03	4.01E-04	7.36E-03
VOC	Toluene	108-88-3	7.52E-01	7.43E-05	1.93E-01	1.21E-01	1.99E-03	1.33E-02	4.55E-03	6.05E-05	1.17E-02
VOC	1,2,4-Trimethylbenzene	95-63-6	5.24E-01	6.84E-05	1.61E-01	8.45E-02	2.03E-03	1.36E-02	4.55E-03	6.19E-05	9.96E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	5.20E-01	7.49E-05	1.54E-01	8.39E-02	2.27E-03	1.52E-02	4.55E-03	6.90E-05	1.06E-02
VOC	Xylenes (total)	1330-20-7	6.74E-01	7.56E-05	2.52E-01	1.09E-01	1.58E-03	1.06E-02	4.55E-03	4.84E-05	1.22E-02
SVOC	Anthracene	120-12-7	2.80E-01	6.69E-05	1.30E-03	4.52E-02	2.73E-02	1.56E-01	4.55E-03	7.10E-04	9.26E-04
SVOC	Benzo(a)anthracene	56-55-3	4.41E-01	7.78E-05	5.55E-05	7.17E-02	6.73E-02	3.13E-01	4.55E-03	1.43E-03	
SVOC	Benzo(a)pyrene	50-32-8	3.72E-01	7.78E-05	1.49E-05	6.21E-02	6.63E-02	3.10E-01	4.55E-03	1.41E-03	
SVOC	Benzo(b)fluoranthene	205-99-2	1.95E-01	4.80E-05	1.66E-03	3.15E-02	1.80E-02	1.08E-01	4.55E-03	4.94E-04	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.88E-01	4.54E-05	1.10E-05	3.20E-02	3.54E-02	1.94E-01	4.55E-03	8.82E-04	
SVOC	Chrysene	218-01-9	2.14E-01	5.37E-05	1.48E-03	3.46E-02	2.04E-02	1.22E-01	4.55E-03	5.54E-04	
SVOC	Ethanol	64-17-5	1.06E+00	1.12E-04	1.75E-04	1.72E-01	1.32E-01	4.73E-01	4.55E-03	2.15E-03	
SVOC	Fluorene	86-73-7	3.14E-01	6.81E-05	1.39E-03	5.06E-02	2.93E-02	1.65E-01	4.55E-03	7.54E-04	1.05E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.64E-01	4.89E-05	2.03E-05	2.75E-02	2.94E-02	1.66E-01	4.55E-03	7.57E-04	
SVOC	Naphthalene	91-20-3	5.10E-01	6.48E-05	1.20E-02	8.22E-02	1.37E-02	8.49E-02	4.55E-03	3.87E-04	4.66E-03
SVOC	Phenanthrene	85-01-8	3.24E-01	6.45E-05	1.41E-03	5.23E-02	2.94E-02	1.66E-01	4.55E-03	7.56E-04	1.06E-03
SVOC	Pyrene	129-00-0	2.35E-01	6.26E-05	2.00E-04	3.80E-02	3.26E-02	1.81E-01	4.55E-03	8.24E-04	
SVOC	Tetraethylene Glycol	112-60-7	4.39E-01	6.96E-05	1.62E-11	1.80E+03	2.97E+03	9.97E-01	3.14E-01	3.13E-01	
INORG	Lead	7439-92-1									

Attachment 5

Table 1

Normalized Indoor Air Concentration in a Default PADEP Residential Building (w/ Basement) Due to Vapor Intrusion from Groundwater
Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

Subsurface and Building Characteristics			Crack Soil
SCS Soil texture class			Sand
Bulk density	kg/L	ρ_b	1.66
Total porosity	L/L-soil	θ_T	0.375
Water-filled porosity	L/L-soil	θ_w	0.054
Air-filled porosity	L/L-soil	θ_a	0.321
Residual saturation	L/L-soil	θ_r	0.053
Hydraulic conductivity	cm/s	K	7.4E-03
Dynamic viscosity of water	g/cm-s	μ_w	0.01307
Density of water	g/cm ³	ρ_w	1.0
Gravitational acceleration	cm/s ²	g	980.7
Intrinsic permeability	cm ²	k	9.9E-08
Relative saturation	unitless	S_e	0.003
van Genuchten N	unitless	N	3.177
van Genuchten M	unitless	M	0.685
Relative air permeability	unitless	k_{rg}	0.998
Permeability to vapor	cm ²	k_v	9.90E-08
Distance from foundation to source	m	L_{T-gw}	3.69
Bldg foundation thickness	m	L_{crack}	0.1
Bldg foundation length	m		10.00
Bldg foundation width	m		10.00
Bldg occupied height	m		3.66
Bldg occupied volume	m ³		366.00
Occupied depth below ground	m		2.0
Bldg area for vapor intrusion	m ²	A_B	180.0
Ratio of A_{crack} to A_B		η	2E-04
Area of cracks	m ²	A_{crack}	4E-02
Air exchange rate	hour ⁻¹	ach	0.18
Building ventilation rate	m ³ /day	Q_{bldg}	1.6E+03
Pressure diff. outdoors-indoors	kg/m-s ²	ΔP	4.0
Viscosity of air	kg/m-s	μ_a	1.8E-05
Crack length (bldg perimeter)	m	X_{crack}	40
Crack depth below ground	m	Z_{crack}	2.10
Crack radius	m	r_{crack}	1E-03
Soil gas flow rate into bldg	m ³ /day	Q_{soil}	7.20

Attachment 5

Table 2

Unit Risk and Hazard Quotient Calculations for Groundwater Vapor Intrusion into a Default PADEP Residential Building (w/ Basement)

Resident

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{gw} (mg/L)	C _{air} (mg/m ³)	Cancer		Noncancer	
						URF (mg/m ³) ⁻¹	Risk	RfC (mg/m ³)	HQ
VOC	Benzene	71-43-2	A	1.00E+00	1.27E-02	7.8E-03	3.5E-05	3.0E-02	4.1E-01
VOC	Cumene	98-82-8	D	1.00E+00	1.04E-02			4.0E-01	2.5E-02
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	5.89E-03	6.0E-01	1.3E-03	9.0E-03	6.3E-01
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	8.87E-03	2.6E-02	8.2E-05	7.0E-03	1.2E+00
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	1.07E-02			1.0E+00	1.0E-02
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	7.36E-03	2.6E-04	6.8E-07	3.0E+00	2.4E-03
VOC	Toluene	108-88-3	ID	1.00E+00	1.17E-02			5.0E+00	2.2E-03
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	9.96E-03			6.0E-02	1.6E-01
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	1.06E-02			6.0E-02	1.7E-01
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	1.22E-02			1.0E-01	1.2E-01
SVOC	Anthracene	120-12-7	ID	1.00E+00	9.26E-04				
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		6.0E-02			
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		6.0E-01		2.0E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		6.0E-02			
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00					
SVOC	Chrysene	218-01-9	B2	1.00E+00		6.0E-04			
SVOC	Ethanol	64-17-5		1.00E+00				1.9E+01	
SVOC	Fluorene	86-73-7	D	1.00E+00	1.05E-03				
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		6.0E-02			
SVOC	Naphthalene	91-20-3	C	1.00E+00	4.66E-03	3.4E-02	5.6E-05	3.0E-03	1.5E+00
SVOC	Phenanthrene	85-01-8	D	1.00E+00	1.06E-03				
SVOC	Pyrene	129-00-0	NC	1.00E+00					
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00					
INORG	Lead	7439-92-1	B2	1.00E+00					

Attachment 6

Soil Migration to Groundwater Calculations

Table 1 – Groundwater Protection Concentrations

Table 2 – Soil Migration to Groundwater Criteria Based on the Nonpotable GW Use RBSL [Cancer]

Table 3 – Soil Migration to Groundwater Criteria Based on the Nonpotable GW Use RBSL [Noncancer]

Table 4 – Soil Migration to Groundwater Criteria Based on the RW GW Vol to Outdoor Air RBSL [Cancer]

Table 5 – Soil Migration to Groundwater Criteria Based on the RW GW Vol to Outdoor Air RBSL [Noncancer]

Table 6 – Soil Migration to Groundwater Criteria Based on the RW GW Vapor Intrusion RBSL [Cancer]

Table 7 – Soil Migration to Groundwater Criteria Based on the RW GW Vapor Intrusion RBSL [Noncancer]

Table 8 – Soil Migration to Groundwater Criteria Based on the Construction Worker Direct Contact RBSL [Cancer]

Table 9 – Soil Migration to Groundwater Criteria Based on the Construction Worker Direct Contact RBSL [Noncancer]

Table 10 – Soil Migration to Groundwater Criteria Based on the Off-Site Resident Vapor Intrusion RBSL [Cancer]

Table 11 – Soil Migration to Groundwater Criteria Based on the Off-Site Resident Vapor Intrusion RBSL [Noncancer]

Table 12 – Soil Migration to Groundwater Criteria Based on the GW MtSW RBSL



Attachment 6

Table 1

Groundwater Protection Concentrations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	Nonpotable Groundwater Use RBSL [Cancer] (mg/L)	Nonpotable Groundwater Use RBSL [Noncancer] (mg/L)	RW GW Volatilization to Outdoor Air RBSL [Cancer] (mg/L)	RW GW Volatilization to Outdoor Air RBSL [Noncancer] (mg/L)	RW GW Vapor Intrusion RBSL [Cancer] (mg/L)	RW GW Vapor Intrusion RBSL [Noncancer] (mg/L)	Construction Worker Direct Contact RBSL [Cancer] (mg/L)	Construction Worker Direct Contact RBSL [Noncancer] (mg/L)	Off-Site Resident Vapor Intrusion RBSL [Cancer] (mg/L)	Off-Site Resident Vapor Intrusion RBSL [Noncancer] (mg/L)	Groundwater MTSW RBSL (mg/L)	Groundwater Protection Concentration (mg/L)	GWP Basis
VOC	Benzene	71-43-2	A	3.0E-01	6.1E-01	6.5E+02	5.5E+02	4.6E+00	3.8E+00	4.2E+01	4.0E+00	2.8E-01	2.5E-01	1.3E+02	2.5E-01	Min
VOC	Cumene	98-82-8	D		3.7E+01		9.1E+03		6.3E+01		3.0E+01		4.0E+00	2.6E+00	2.6E+00	Min
VOC	1,2-Dibromoethane	106-93-4	LC	1.7E-02	6.7E-01	1.6E+01	3.1E+02	1.1E-01	2.2E+00	1.1E+00	9.1E-01	7.9E-03	1.6E-01		7.9E-03	Min
VOC	1,2-Dichloroethane	107-06-2	B2	3.3E-01	2.2E+00	2.5E+02	1.7E+02	1.8E+00	1.2E+00	1.9E+01	4.9E+00	1.2E-01	8.2E-02	3.1E+03	8.2E-02	Min
VOC	Ethyl Benzene	100-41-4	D		2.0E+00		2.2E+04		1.5E+02		4.0E+01		9.7E+00	1.3E+01	2.0E+00	Min
VOC	Methyl tert-butyl ether	1634-04-4	C	2.1E+01	4.5E+01	2.9E+04	8.0E+04	2.1E+02	5.8E+02	1.8E+03	1.9E+02	1.5E+01	4.2E+01	1.1E+04	1.5E+01	Min
VOC	Toluene	108-88-3	ID		2.5E+01		1.0E+05		7.0E+02		2.0E+02		4.5E+01	5.2E+01	2.5E+01	Min
VOC	1,2,4-Trimethylbenzene	95-63-6	ID		8.7E+00		1.4E+03		9.7E+00		1.5E+01		6.3E-01	3.3E+01	6.3E-01	Min
VOC	1,3,5-Trimethylbenzene	108-67-8	ID		8.8E+00		1.3E+03		9.1E+00		1.5E+01		5.9E-01	7.1E+01	5.9E-01	Min
VOC	Xylenes (total)	1330-20-7	ID		3.7E+00		1.9E+03		1.3E+01		1.7E+01		8.6E-01	2.1E+02	8.6E-01	Min
SVOC	Anthracene	120-12-7	ID		2.4E+02						1.9E+04			4.0E+01	4.0E+01	Min
SVOC	Benzo(a)anthracene	56-55-3	B2	1.0E-01						1.4E+03				1.3E-02	1.3E-02	Min
SVOC	Benzo(a)pyrene	50-32-8	HC	1.0E-02	4.4E-02					1.4E+02	5.8E+00			1.3E-03	1.3E-03	Min
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.6E-01						1.4E+03				1.3E-02	1.3E-02	Min
SVOC	Benzo(g,h,i)perylene	191-24-2	D		4.4E+01						5.8E+03			1.2E-02	1.2E-02	Min
SVOC	Chrysene	218-01-9	B2	1.6E+01						1.4E+05				1.3E+00	1.3E+00	Min
SVOC	Ethanol	64-17-5			1.0E+04						8.3E+05				1.0E+04	Min
SVOC	Fluorene	86-73-7	D		9.7E+01						7.8E+03			7.0E+00	7.0E+00	Min
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.0E-01						1.4E+03				1.3E-02	1.3E-02	Min
SVOC	Naphthalene	91-20-3	C	4.2E-01	3.9E-01	3.3E+02	1.2E+02	2.4E+00	8.8E-01	1.9E+01	2.8E-01	1.8E-01	6.7E-02	4.3E+01	6.7E-02	Min
SVOC	Phenanthrene	85-01-8	D		7.3E+01						5.8E+03			1.0E+00	1.0E+00	Min
SVOC	Pyrene	129-00-0	NC		5.0E+01						5.8E+03			3.0E+00	3.0E+00	Min
SVOC	Tetraethylene Glycol	112-60-7			2.9E+02						3.9E+04			1.9E+05	2.9E+02	Min
INORG	Lead	7439-92-1	B2											2.5E+00	2.5E+00	Min

Notes:

Cancer RBSLs are calculated at a target cancer risk of 1E-05. Noncancer RBSLs are calculated at a target HQ of 0.1.

Attachment 6

Table 2

Soil Migration to Groundwater Criteria Based on the Nonpotable GW Use RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
VOC	Benzene	71-43-2	3.0E-01	TCRL	1.8E+03	5.8E+01		1.7E-01	2.1E+00	1.2E+02	1.2E+02	LT
VOC	Cumene	98-82-8			6.1E+01	7.1E+02		3.3E-01				NA
VOC	1,2-Dibromoethane	106-93-4	1.7E-02	TCRL	3.9E+03	2.2E+01		2.4E-02	5.0E-02	6.8E+00	6.8E+00	LT
VOC	1,2-Dichloroethane	107-06-2	3.3E-01	TCRL	8.5E+03	1.7E+01		2.9E-02	8.2E-01	1.3E+02	1.3E+02	LT
VOC	Ethyl Benzene	100-41-4			1.7E+02	3.7E+02		2.2E-01				NA
VOC	Methyl tert-butyl ether	1634-04-4	2.1E+01	TCRL	5.1E+04	1.1E+01		1.8E-02	3.9E+01	8.5E+03	8.5E+03	LT
VOC	Toluene	108-88-3			5.3E+02	1.8E+02		1.9E-01				NA
VOC	1,2,4-Trimethylbenzene	95-63-6			5.7E+01	9.0E+02		1.6E-01				NA
VOC	1,3,5-Trimethylbenzene	108-67-8			4.8E+01	1.8E+03		1.5E-01				NA
VOC	Xylenes (total)	1330-20-7			1.7E+02	3.9E+02		2.5E-01				NA
SVOC	Anthracene	120-12-7			4.3E-02	3.0E+04		1.3E-03				NA
SVOC	Benzo(a)anthracene	56-55-3	1.0E-01	TCRL	9.4E-03	4.0E+05		5.6E-05	4.2E+03	4.2E+01		NA
SVOC	Benzo(a)pyrene	50-32-8	1.0E-02	TCRL	1.6E-03	1.0E+06		1.5E-05	1.0E+03	4.0E+00		NA
SVOC	Benzo(b)fluoranthene	205-99-2	1.6E-01	TCRL	1.5E-03	1.2E+06		1.7E-03	1.9E+04	6.2E+01		NA
SVOC	Benzo(g,h,i)perylene	191-24-2			2.6E-04	1.3E+07		1.1E-05				NA
SVOC	Chrysene	218-01-9	1.6E+01	TCRL	1.6E-03	4.0E+05		1.5E-03	6.2E+05	6.2E+03		NA
SVOC	Ethanol	64-17-5				6.8E-01		1.7E-04				NA
SVOC	Fluorene	86-73-7			2.0E+00	1.4E+04		1.4E-03				NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.0E-01	TCRL	2.2E-05	3.4E+06		2.0E-05	3.4E+04	4.0E+01		NA
SVOC	Naphthalene	91-20-3	4.2E-01	TCRL	3.1E+01	2.0E+03		1.2E-02	8.4E+01	1.7E+02	1.7E+02	LT
SVOC	Phenanthrene	85-01-8			1.2E+00	2.4E+04		1.4E-03				NA
SVOC	Pyrene	129-00-0			1.4E-01	1.1E+05		2.0E-04				NA
SVOC	Tetraethylene Glycol	112-60-7			1.0E+06	3.0E-02		1.6E-11				NA
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 2

Soil Migration to Groundwater Criteria Based on the Nonpotable GW Use RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 6

Table 3

Soil Migration to Groundwater Criteria Based on the Nonpotable GW Use RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
VOC	Benzene	71-43-2	6.1E-01	THQ	1.8E+03	5.8E+01		1.7E-01	4.4E+00	2.5E+02	2.5E+02	LT
VOC	Cumene	98-82-8	3.7E+01	THQ	6.1E+01	7.1E+02		3.3E-01	2.7E+03	1.5E+04		NA
VOC	1,2-Dibromoethane	106-93-4	6.7E-01	THQ	3.9E+03	2.2E+01		2.4E-02	2.0E+00	2.7E+02	2.7E+02	LT
VOC	1,2-Dichloroethane	107-06-2	2.2E+00	THQ	8.5E+03	1.7E+01		2.9E-02	5.5E+00	8.9E+02	8.9E+02	LT
VOC	Ethyl Benzene	100-41-4	2.0E+00	THQ	1.7E+02	3.7E+02		2.2E-01	7.8E+01	8.2E+02	8.2E+02	LT
VOC	Methyl tert-butyl ether	1634-04-4	4.5E+01	THQ	5.1E+04	1.1E+01		1.8E-02	8.3E+01	1.8E+04	1.8E+04	LT
VOC	Toluene	108-88-3	2.5E+01	THQ	5.3E+02	1.8E+02		1.9E-01	4.8E+02	9.8E+03	9.8E+03	LT
VOC	1,2,4-Trimethylbenzene	95-63-6	8.7E+00	THQ	5.7E+01	9.0E+02		1.6E-01	7.9E+02	3.5E+03		NA
VOC	1,3,5-Trimethylbenzene	108-67-8	8.8E+00	THQ	4.8E+01	1.8E+03		1.5E-01	1.6E+03	3.5E+03		NA
VOC	Xylenes (total)	1330-20-7	3.7E+00	THQ	1.7E+02	3.9E+02		2.5E-01	1.5E+02	1.5E+03	1.5E+03	LT
SVOC	Anthracene	120-12-7	2.4E+02	THQ	4.3E-02	3.0E+04		1.3E-03	7.0E+05	9.4E+04		NA
SVOC	Benzo(a)anthracene	56-55-3			9.4E-03	4.0E+05		5.6E-05				NA
SVOC	Benzo(a)pyrene	50-32-8	4.4E-02	THQ	1.6E-03	1.0E+06		1.5E-05	4.5E+03	1.8E+01		NA
SVOC	Benzo(b)fluoranthene	205-99-2			1.5E-03	1.2E+06		1.7E-03				NA
SVOC	Benzo(g,h,i)perylene	191-24-2	4.4E+01	THQ	2.6E-04	1.3E+07		1.1E-05	5.6E+07	1.7E+04		NA
SVOC	Chrysene	218-01-9			1.6E-03	4.0E+05		1.5E-03				NA
SVOC	Ethanol	64-17-5	1.0E+04	THQ		6.8E-01		1.7E-04	7.5E+03	4.2E+06	4.2E+06	LT
SVOC	Fluorene	86-73-7	9.7E+01	THQ	2.0E+00	1.4E+04		1.4E-03	1.3E+05	3.9E+04		NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5			2.2E-05	3.4E+06		2.0E-05				NA
SVOC	Naphthalene	91-20-3	3.9E-01	THQ	3.1E+01	2.0E+03		1.2E-02	7.8E+01	1.5E+02	1.5E+02	LT
SVOC	Phenanthrene	85-01-8	7.3E+01	THQ	1.2E+00	2.4E+04		1.4E-03	1.8E+05	2.9E+04		NA
SVOC	Pyrene	129-00-0	5.0E+01	THQ	1.4E-01	1.1E+05		2.0E-04	5.2E+05	2.0E+04		NA
SVOC	Tetraethylene Glycol	112-60-7	2.9E+02	THQ	1.0E+06	3.0E-02		1.6E-11	1.9E+02	1.2E+05	1.2E+05	LT
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 3

Soil Migration to Groundwater Criteria Based on the Nonpotable GW Use RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 6

Table 4

Soil Migration to Groundwater Criteria Based on the RW GW Vol to Outdoor Air RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
VOC	Benzene	71-43-2	6.5E+02	TCRL	1.8E+03	5.8E+01		1.7E-01	4.7E+03	2.6E+05		NA
VOC	Cumene	98-82-8			6.1E+01	7.1E+02		3.3E-01				NA
VOC	1,2-Dibromoethane	106-93-4	1.6E+01	TCRL	3.9E+03	2.2E+01		2.4E-02	4.7E+01	6.3E+03	6.3E+03	LT
VOC	1,2-Dichloroethane	107-06-2	2.5E+02	TCRL	8.5E+03	1.7E+01		2.9E-02	6.4E+02	1.0E+05	1.0E+05	LT
VOC	Ethyl Benzene	100-41-4			1.7E+02	3.7E+02		2.2E-01				NA
VOC	Methyl tert-butyl ether	1634-04-4	2.9E+04	TCRL	5.1E+04	1.1E+01		1.8E-02	5.4E+04	1.1E+07		NA
VOC	Toluene	108-88-3			5.3E+02	1.8E+02		1.9E-01				NA
VOC	1,2,4-Trimethylbenzene	95-63-6			5.7E+01	9.0E+02		1.6E-01				NA
VOC	1,3,5-Trimethylbenzene	108-67-8			4.8E+01	1.8E+03		1.5E-01				NA
VOC	Xylenes (total)	1330-20-7			1.7E+02	3.9E+02		2.5E-01				NA
SVOC	Anthracene	120-12-7			4.3E-02	3.0E+04		1.3E-03				NA
SVOC	Benzo(a)anthracene	56-55-3			9.4E-03	4.0E+05		5.6E-05				NA
SVOC	Benzo(a)pyrene	50-32-8			1.6E-03	1.0E+06		1.5E-05				NA
SVOC	Benzo(b)fluoranthene	205-99-2			1.5E-03	1.2E+06		1.7E-03				NA
SVOC	Benzo(g,h,i)perylene	191-24-2			2.6E-04	1.3E+07		1.1E-05				NA
SVOC	Chrysene	218-01-9			1.6E-03	4.0E+05		1.5E-03				NA
SVOC	Ethanol	64-17-5				6.8E-01		1.7E-04				NA
SVOC	Fluorene	86-73-7			2.0E+00	1.4E+04		1.4E-03				NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5			2.2E-05	3.4E+06		2.0E-05				NA
SVOC	Naphthalene	91-20-3	3.3E+02	TCRL	3.1E+01	2.0E+03		1.2E-02	6.7E+04	1.3E+05		NA
SVOC	Phenanthrene	85-01-8			1.2E+00	2.4E+04		1.4E-03				NA
SVOC	Pyrene	129-00-0			1.4E-01	1.1E+05		2.0E-04				NA
SVOC	Tetraethylene Glycol	112-60-7			1.0E+06	3.0E-02		1.6E-11				NA
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 4

Soil Migration to Groundwater Criteria Based on the RW GW Vol to Outdoor Air RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 6

Table 5

Soil Migration to Groundwater Criteria Based on the RW GW Vol to Outdoor Air RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
VOC	Benzene	71-43-2	5.5E+02	THQ	1.8E+03	5.8E+01		1.7E-01	3.9E+03	2.2E+05		NA
VOC	Cumene	98-82-8	9.1E+03	THQ	6.1E+01	7.1E+02		3.3E-01	6.6E+05	3.7E+06		NA
VOC	1,2-Dibromoethane	106-93-4	3.1E+02	THQ	3.9E+03	2.2E+01		2.4E-02	9.0E+02	1.2E+05		NA
VOC	1,2-Dichloroethane	107-06-2	1.7E+02	THQ	8.5E+03	1.7E+01		2.9E-02	4.1E+02	6.6E+04	6.6E+04	LT
VOC	Ethyl Benzene	100-41-4	2.2E+04	THQ	1.7E+02	3.7E+02		2.2E-01	8.3E+05	8.7E+06		NA
VOC	Methyl tert-butyl ether	1634-04-4	8.0E+04	THQ	5.1E+04	1.1E+01		1.8E-02	1.5E+05	3.2E+07		NA
VOC	Toluene	108-88-3	1.0E+05	THQ	5.3E+02	1.8E+02		1.9E-01	1.9E+06	4.0E+07		NA
VOC	1,2,4-Trimethylbenzene	95-63-6	1.4E+03	THQ	5.7E+01	9.0E+02		1.6E-01	1.3E+05	5.6E+05		NA
VOC	1,3,5-Trimethylbenzene	108-67-8	1.3E+03	THQ	4.8E+01	1.8E+03		1.5E-01	2.3E+05	5.2E+05		NA
VOC	Xylenes (total)	1330-20-7	1.9E+03	THQ	1.7E+02	3.9E+02		2.5E-01	7.7E+04	7.7E+05		NA
SVOC	Anthracene	120-12-7			4.3E-02	3.0E+04		1.3E-03				NA
SVOC	Benzo(a)anthracene	56-55-3			9.4E-03	4.0E+05		5.6E-05				NA
SVOC	Benzo(a)pyrene	50-32-8			1.6E-03	1.0E+06		1.5E-05				NA
SVOC	Benzo(b)fluoranthene	205-99-2			1.5E-03	1.2E+06		1.7E-03				NA
SVOC	Benzo(g,h,i)perylene	191-24-2			2.6E-04	1.3E+07		1.1E-05				NA
SVOC	Chrysene	218-01-9			1.6E-03	4.0E+05		1.5E-03				NA
SVOC	Ethanol	64-17-5				6.8E-01		1.7E-04				NA
SVOC	Fluorene	86-73-7			2.0E+00	1.4E+04		1.4E-03				NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5			2.2E-05	3.4E+06		2.0E-05				NA
SVOC	Naphthalene	91-20-3	1.2E+02	THQ	3.1E+01	2.0E+03		1.2E-02	2.5E+04	4.9E+04		NA
SVOC	Phenanthrene	85-01-8			1.2E+00	2.4E+04		1.4E-03				NA
SVOC	Pyrene	129-00-0			1.4E-01	1.1E+05		2.0E-04				NA
SVOC	Tetraethylene Glycol	112-60-7			1.0E+06	3.0E-02		1.6E-11				NA
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 5

Soil Migration to Groundwater Criteria Based on the RW GW Vol to Outdoor Air RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

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Table 6

Soil Migration to Groundwater Criteria Based on the RW GW Vapor Intrusion RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
				TCRL								LT
VOC	Benzene	71-43-2	4.6E+00	TCRL	1.8E+03	5.8E+01		1.7E-01	3.3E+01	1.8E+03	1.8E+03	LT
VOC	Cumene	98-82-8			6.1E+01	7.1E+02		3.3E-01				NA
VOC	1,2-Dibromoethane	106-93-4	1.1E-01	TCRL	3.9E+03	2.2E+01		2.4E-02	3.3E-01	4.5E+01	4.5E+01	LT
VOC	1,2-Dichloroethane	107-06-2	1.8E+00	TCRL	8.5E+03	1.7E+01		2.9E-02	4.6E+00	7.3E+02	7.3E+02	LT
VOC	Ethyl Benzene	100-41-4			1.7E+02	3.7E+02		2.2E-01				NA
VOC	Methyl tert-butyl ether	1634-04-4	2.1E+02	TCRL	5.1E+04	1.1E+01		1.8E-02	3.9E+02	8.4E+04	8.4E+04	LT
VOC	Toluene	108-88-3			5.3E+02	1.8E+02		1.9E-01				NA
VOC	1,2,4-Trimethylbenzene	95-63-6			5.7E+01	9.0E+02		1.6E-01				NA
VOC	1,3,5-Trimethylbenzene	108-67-8			4.8E+01	1.8E+03		1.5E-01				NA
VOC	Xylenes (total)	1330-20-7			1.7E+02	3.9E+02		2.5E-01				NA
SVOC	Anthracene	120-12-7			4.3E-02	3.0E+04		1.3E-03				NA
SVOC	Benzo(a)anthracene	56-55-3			9.4E-03	4.0E+05		5.6E-05				NA
SVOC	Benzo(a)pyrene	50-32-8			1.6E-03	1.0E+06		1.5E-05				NA
SVOC	Benzo(b)fluoranthene	205-99-2			1.5E-03	1.2E+06		1.7E-03				NA
SVOC	Benzo(g,h,i)perylene	191-24-2			2.6E-04	1.3E+07		1.1E-05				NA
SVOC	Chrysene	218-01-9			1.6E-03	4.0E+05		1.5E-03				NA
SVOC	Ethanol	64-17-5				6.8E-01		1.7E-04				NA
SVOC	Fluorene	86-73-7			2.0E+00	1.4E+04		1.4E-03				NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5			2.2E-05	3.4E+06		2.0E-05				NA
SVOC	Naphthalene	91-20-3	2.4E+00	TCRL	3.1E+01	2.0E+03		1.2E-02	4.9E+02	9.7E+02		NA
SVOC	Phenanthrene	85-01-8			1.2E+00	2.4E+04		1.4E-03				NA
SVOC	Pyrene	129-00-0			1.4E-01	1.1E+05		2.0E-04				NA
SVOC	Tetraethylene Glycol	112-60-7			1.0E+06	3.0E-02		1.6E-11				NA
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 6

Soil Migration to Groundwater Criteria Based on the RW GW Vapor Intrusion RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 6

Table 7

Soil Migration to Groundwater Criteria Based on the RW GW Vapor Intrusion RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
				THQ								LT
VOC	Benzene	71-43-2	3.8E+00	THQ	1.8E+03	5.8E+01		1.7E-01	2.7E+01	1.5E+03	1.5E+03	LT
VOC	Cumene	98-82-8	6.3E+01	THQ	6.1E+01	7.1E+02		3.3E-01	4.6E+03	2.5E+04		NA
VOC	1,2-Dibromoethane	106-93-4	2.2E+00	THQ	3.9E+03	2.2E+01		2.4E-02	6.4E+00	8.6E+02	8.6E+02	LT
VOC	1,2-Dichloroethane	107-06-2	1.2E+00	THQ	8.5E+03	1.7E+01		2.9E-02	3.0E+00	4.8E+02	4.8E+02	LT
VOC	Ethyl Benzene	100-41-4	1.5E+02	THQ	1.7E+02	3.7E+02		2.2E-01	5.8E+03	6.1E+04		NA
VOC	Methyl tert-butyl ether	1634-04-4	5.8E+02	THQ	5.1E+04	1.1E+01		1.8E-02	1.1E+03	2.3E+05	2.3E+05	LT
VOC	Toluene	108-88-3	7.0E+02	THQ	5.3E+02	1.8E+02		1.9E-01	1.4E+04	2.8E+05		NA
VOC	1,2,4-Trimethylbenzene	95-63-6	9.7E+00	THQ	5.7E+01	9.0E+02		1.6E-01	8.9E+02	3.9E+03		NA
VOC	1,3,5-Trimethylbenzene	108-67-8	9.1E+00	THQ	4.8E+01	1.8E+03		1.5E-01	1.6E+03	3.6E+03		NA
VOC	Xylenes (total)	1330-20-7	1.3E+01	THQ	1.7E+02	3.9E+02		2.5E-01	5.4E+02	5.4E+03		NA
SVOC	Anthracene	120-12-7			4.3E-02	3.0E+04		1.3E-03				NA
SVOC	Benzo(a)anthracene	56-55-3			9.4E-03	4.0E+05		5.6E-05				NA
SVOC	Benzo(a)pyrene	50-32-8			1.6E-03	1.0E+06		1.5E-05				NA
SVOC	Benzo(b)fluoranthene	205-99-2			1.5E-03	1.2E+06		1.7E-03				NA
SVOC	Benzo(g,h,i)perylene	191-24-2			2.6E-04	1.3E+07		1.1E-05				NA
SVOC	Chrysene	218-01-9			1.6E-03	4.0E+05		1.5E-03				NA
SVOC	Ethanol	64-17-5				6.8E-01		1.7E-04				NA
SVOC	Fluorene	86-73-7			2.0E+00	1.4E+04		1.4E-03				NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5			2.2E-05	3.4E+06		2.0E-05				NA
SVOC	Naphthalene	91-20-3	8.8E-01	THQ	3.1E+01	2.0E+03		1.2E-02	1.8E+02	3.5E+02	3.5E+02	LT
SVOC	Phenanthrene	85-01-8			1.2E+00	2.4E+04		1.4E-03				NA
SVOC	Pyrene	129-00-0			1.4E-01	1.1E+05		2.0E-04				NA
SVOC	Tetraethylene Glycol	112-60-7			1.0E+06	3.0E-02		1.6E-11				NA
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 7

Soil Migration to Groundwater Criteria Based on the RW GW Vapor Intrusion RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 6

Table 8

Soil Migration to Groundwater Criteria Based on the Construction Worker Direct Contact RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
VOC	Benzene	71-43-2	4.2E+01	TCRL	1.8E+03	5.8E+01		1.7E-01	3.0E+02	1.7E+04	1.7E+04	LT
VOC	Cumene	98-82-8			6.1E+01	7.1E+02		3.3E-01				NA
VOC	1,2-Dibromoethane	106-93-4	1.1E+00	TCRL	3.9E+03	2.2E+01		2.4E-02	3.3E+00	4.5E+02	4.5E+02	LT
VOC	1,2-Dichloroethane	107-06-2	1.9E+01	TCRL	8.5E+03	1.7E+01		2.9E-02	4.7E+01	7.5E+03	7.5E+03	LT
VOC	Ethyl Benzene	100-41-4			1.7E+02	3.7E+02		2.2E-01				NA
VOC	Methyl tert-butyl ether	1634-04-4	1.8E+03	TCRL	5.1E+04	1.1E+01		1.8E-02	3.3E+03	7.1E+05	7.1E+05	LT
VOC	Toluene	108-88-3			5.3E+02	1.8E+02		1.9E-01				NA
VOC	1,2,4-Trimethylbenzene	95-63-6			5.7E+01	9.0E+02		1.6E-01				NA
VOC	1,3,5-Trimethylbenzene	108-67-8			4.8E+01	1.8E+03		1.5E-01				NA
VOC	Xylenes (total)	1330-20-7			1.7E+02	3.9E+02		2.5E-01				NA
SVOC	Anthracene	120-12-7			4.3E-02	3.0E+04		1.3E-03				NA
SVOC	Benzo(a)anthracene	56-55-3	1.4E+03	TCRL	9.4E-03	4.0E+05		5.6E-05	5.5E+07	5.5E+05		NA
SVOC	Benzo(a)pyrene	50-32-8	1.4E+02	TCRL	1.6E-03	1.0E+06		1.5E-05	1.4E+07	5.5E+04		NA
SVOC	Benzo(b)fluoranthene	205-99-2	1.4E+03	TCRL	1.5E-03	1.2E+06		1.7E-03	1.7E+08	5.5E+05		NA
SVOC	Benzo(g,h,i)perylene	191-24-2			2.6E-04	1.3E+07		1.1E-05				NA
SVOC	Chrysene	218-01-9	1.4E+05	TCRL	1.6E-03	4.0E+05		1.5E-03	5.5E+09	5.5E+07		NA
SVOC	Ethanol	64-17-5				6.8E-01		1.7E-04				NA
SVOC	Fluorene	86-73-7			2.0E+00	1.4E+04		1.4E-03				NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.4E+03	TCRL	2.2E-05	3.4E+06		2.0E-05	4.7E+08	5.5E+05		NA
SVOC	Naphthalene	91-20-3	1.9E+01	TCRL	3.1E+01	2.0E+03		1.2E-02	3.8E+03	7.5E+03		NA
SVOC	Phenanthrene	85-01-8			1.2E+00	2.4E+04		1.4E-03				NA
SVOC	Pyrene	129-00-0			1.4E-01	1.1E+05		2.0E-04				NA
SVOC	Tetraethylene Glycol	112-60-7			1.0E+06	3.0E-02		1.6E-11				NA
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 8

Soil Migration to Groundwater Criteria Based on the Construction Worker Direct Contact RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 6

Table 9

Soil Migration to Groundwater Criteria Based on the Construction Worker Direct Contact RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
				THQ								LT
VOC	Benzene	71-43-2	4.0E+00	THQ	1.8E+03	5.8E+01		1.7E-01	2.8E+01	1.6E+03	1.6E+03	LT
VOC	Cumene	98-82-8	3.0E+01	THQ	6.1E+01	7.1E+02		3.3E-01	2.2E+03	1.2E+04		NA
VOC	1,2-Dibromoethane	106-93-4	9.1E-01	THQ	3.9E+03	2.2E+01		2.4E-02	2.7E+00	3.6E+02	3.6E+02	LT
VOC	1,2-Dichloroethane	107-06-2	4.9E+00	THQ	8.5E+03	1.7E+01		2.9E-02	1.2E+01	1.9E+03	1.9E+03	LT
VOC	Ethyl Benzene	100-41-4	4.0E+01	THQ	1.7E+02	3.7E+02		2.2E-01	1.5E+03	1.6E+04		NA
VOC	Methyl tert-butyl ether	1634-04-4	1.9E+02	THQ	5.1E+04	1.1E+01		1.8E-02	3.5E+02	7.6E+04	7.6E+04	LT
VOC	Toluene	108-88-3	2.0E+02	THQ	5.3E+02	1.8E+02		1.9E-01	4.0E+03	8.2E+04		NA
VOC	1,2,4-Trimethylbenzene	95-63-6	1.5E+01	THQ	5.7E+01	9.0E+02		1.6E-01	1.4E+03	6.0E+03		NA
VOC	1,3,5-Trimethylbenzene	108-67-8	1.5E+01	THQ	4.8E+01	1.8E+03		1.5E-01	2.7E+03	6.0E+03		NA
VOC	Xylenes (total)	1330-20-7	1.7E+01	THQ	1.7E+02	3.9E+02		2.5E-01	6.8E+02	6.8E+03		NA
SVOC	Anthracene	120-12-7	1.9E+04	THQ	4.3E-02	3.0E+04		1.3E-03	5.8E+07	7.8E+06		NA
SVOC	Benzo(a)anthracene	56-55-3			9.4E-03	4.0E+05		5.6E-05				NA
SVOC	Benzo(a)pyrene	50-32-8	5.8E+00	THQ	1.6E-03	1.0E+06		1.5E-05	5.9E+05	2.3E+03		NA
SVOC	Benzo(b)fluoranthene	205-99-2			1.5E-03	1.2E+06		1.7E-03				NA
SVOC	Benzo(g,h,i)perylene	191-24-2	5.8E+03	THQ	2.6E-04	1.3E+07		1.1E-05	7.5E+09	2.3E+06		NA
SVOC	Chrysene	218-01-9			1.6E-03	4.0E+05		1.5E-03				NA
SVOC	Ethanol	64-17-5	8.3E+05	THQ		6.8E-01		1.7E-04	5.9E+05	3.3E+08	3.3E+08	LT
SVOC	Fluorene	86-73-7	7.8E+03	THQ	2.0E+00	1.4E+04		1.4E-03	1.1E+07	3.1E+06		NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5			2.2E-05	3.4E+06		2.0E-05				NA
SVOC	Naphthalene	91-20-3	2.8E-01	THQ	3.1E+01	2.0E+03		1.2E-02	5.6E+01	1.1E+02	1.1E+02	LT
SVOC	Phenanthrene	85-01-8	5.8E+03	THQ	1.2E+00	2.4E+04		1.4E-03	1.4E+07	2.3E+06		NA
SVOC	Pyrene	129-00-0	5.8E+03	THQ	1.4E-01	1.1E+05		2.0E-04	6.2E+07	2.3E+06		NA
SVOC	Tetraethylene Glycol	112-60-7	3.9E+04	THQ	1.0E+06	3.0E-02		1.6E-11	2.5E+04	1.6E+07	1.6E+07	LT
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 9

Soil Migration to Groundwater Criteria Based on the Construction Worker Direct Contact RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 6

Table 10

Soil Migration to Groundwater Criteria Based on the Off-Site Resident Vapor Intrusion RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
VOC	Benzene	71-43-2	2.8E-01	TCRL	1.8E+03	5.8E+01		1.7E-01	2.0E+00	1.1E+02	1.1E+02	LT
VOC	Cumene	98-82-8			6.1E+01	7.1E+02		3.3E-01				NA
VOC	1,2-Dibromoethane	106-93-4	7.9E-03	TCRL	3.9E+03	2.2E+01		2.4E-02	2.3E-02	3.2E+00	3.2E+00	LT
VOC	1,2-Dichloroethane	107-06-2	1.2E-01	TCRL	8.5E+03	1.7E+01		2.9E-02	3.0E-01	4.9E+01	4.9E+01	LT
VOC	Ethyl Benzene	100-41-4			1.7E+02	3.7E+02		2.2E-01				NA
VOC	Methyl tert-butyl ether	1634-04-4	1.5E+01	TCRL	5.1E+04	1.1E+01		1.8E-02	2.7E+01	5.9E+03	5.9E+03	LT
VOC	Toluene	108-88-3			5.3E+02	1.8E+02		1.9E-01				NA
VOC	1,2,4-Trimethylbenzene	95-63-6			5.7E+01	9.0E+02		1.6E-01				NA
VOC	1,3,5-Trimethylbenzene	108-67-8			4.8E+01	1.8E+03		1.5E-01				NA
VOC	Xylenes (total)	1330-20-7			1.7E+02	3.9E+02		2.5E-01				NA
SVOC	Anthracene	120-12-7			4.3E-02	3.0E+04		1.3E-03				NA
SVOC	Benzo(a)anthracene	56-55-3			9.4E-03	4.0E+05		5.6E-05				NA
SVOC	Benzo(a)pyrene	50-32-8			1.6E-03	1.0E+06		1.5E-05				NA
SVOC	Benzo(b)fluoranthene	205-99-2			1.5E-03	1.2E+06		1.7E-03				NA
SVOC	Benzo(g,h,i)perylene	191-24-2			2.6E-04	1.3E+07		1.1E-05				NA
SVOC	Chrysene	218-01-9			1.6E-03	4.0E+05		1.5E-03				NA
SVOC	Ethanol	64-17-5				6.8E-01		1.7E-04				NA
SVOC	Fluorene	86-73-7			2.0E+00	1.4E+04		1.4E-03				NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5			2.2E-05	3.4E+06		2.0E-05				NA
SVOC	Naphthalene	91-20-3	1.8E-01	TCRL	3.1E+01	2.0E+03		1.2E-02	3.6E+01	7.1E+01	7.1E+01	LT
SVOC	Phenanthrene	85-01-8			1.2E+00	2.4E+04		1.4E-03				NA
SVOC	Pyrene	129-00-0			1.4E-01	1.1E+05		2.0E-04				NA
SVOC	Tetraethylene Glycol	112-60-7			1.0E+06	3.0E-02		1.6E-11				NA
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 10

Soil Migration to Groundwater Criteria Based on the Off-Site Resident Vapor Intrusion RBSL [Cancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 6

Table 11

Soil Migration to Groundwater Criteria Based on the Off-Site Resident Vapor Intrusion RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
VOC	Benzene	71-43-2	2.5E-01	THQ	1.8E+03	5.8E+01		1.7E-01	1.8E+00	9.8E+01	9.8E+01	LT
VOC	Cumene	98-82-8	4.0E+00	THQ	6.1E+01	7.1E+02		3.3E-01	2.9E+02	1.6E+03		NA
VOC	1,2-Dibromoethane	106-93-4	1.6E-01	THQ	3.9E+03	2.2E+01		2.4E-02	4.7E-01	6.4E+01	6.4E+01	LT
VOC	1,2-Dichloroethane	107-06-2	8.2E-02	THQ	8.5E+03	1.7E+01		2.9E-02	2.1E-01	3.3E+01	3.3E+01	LT
VOC	Ethyl Benzene	100-41-4	9.7E+00	THQ	1.7E+02	3.7E+02		2.2E-01	3.7E+02	3.9E+03		NA
VOC	Methyl tert-butyl ether	1634-04-4	4.2E+01	THQ	5.1E+04	1.1E+01		1.8E-02	7.9E+01	1.7E+04	1.7E+04	LT
VOC	Toluene	108-88-3	4.5E+01	THQ	5.3E+02	1.8E+02		1.9E-01	8.7E+02	1.8E+04		NA
VOC	1,2,4-Trimethylbenzene	95-63-6	6.3E-01	THQ	5.7E+01	9.0E+02		1.6E-01	5.7E+01	2.5E+02	2.5E+02	LT
VOC	1,3,5-Trimethylbenzene	108-67-8	5.9E-01	THQ	4.8E+01	1.8E+03		1.5E-01	1.0E+02	2.4E+02	2.4E+02	LT
VOC	Xylenes (total)	1330-20-7	8.6E-01	THQ	1.7E+02	3.9E+02		2.5E-01	3.4E+01	3.4E+02	3.4E+02	LT
SVOC	Anthracene	120-12-7			4.3E-02	3.0E+04		1.3E-03				NA
SVOC	Benzo(a)anthracene	56-55-3			9.4E-03	4.0E+05		5.6E-05				NA
SVOC	Benzo(a)pyrene	50-32-8			1.6E-03	1.0E+06		1.5E-05				NA
SVOC	Benzo(b)fluoranthene	205-99-2			1.5E-03	1.2E+06		1.7E-03				NA
SVOC	Benzo(g,h,i)perylene	191-24-2			2.6E-04	1.3E+07		1.1E-05				NA
SVOC	Chrysene	218-01-9			1.6E-03	4.0E+05		1.5E-03				NA
SVOC	Ethanol	64-17-5				6.8E-01		1.7E-04				NA
SVOC	Fluorene	86-73-7			2.0E+00	1.4E+04		1.4E-03				NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5			2.2E-05	3.4E+06		2.0E-05				NA
SVOC	Naphthalene	91-20-3	6.7E-02	THQ	3.1E+01	2.0E+03		1.2E-02	1.4E+01	2.7E+01	2.7E+01	LT
SVOC	Phenanthrene	85-01-8			1.2E+00	2.4E+04		1.4E-03				NA
SVOC	Pyrene	129-00-0			1.4E-01	1.1E+05		2.0E-04				NA
SVOC	Tetraethylene Glycol	112-60-7			1.0E+06	3.0E-02		1.6E-11				NA
INORG	Lead	7439-92-1					9.0E+02					NA

Attachment 6

Table 11

Soil Migration to Groundwater Criteria Based on the Off-Site Resident Vapor Intrusion RBSL [Noncancer]

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 6

Table 12

Soil Migration to Groundwater Criteria Based on the GW MtSW RBSL

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)	Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
VOC	Benzene	71-43-2	1.3E+02	1.8E+03	5.8E+01		1.7E-01	9.3E+02	5.2E+04		NA
VOC	Cumene	98-82-8	2.6E+00	6.1E+01	7.1E+02		3.3E-01	1.9E+02	1.0E+03	1.0E+03	LT
VOC	1,2-Dibromoethane	106-93-4		3.9E+03	2.2E+01		2.4E-02				
VOC	1,2-Dichloroethane	107-06-2	3.1E+03	8.5E+03	1.7E+01		2.9E-02	7.8E+03	1.2E+06		NA
VOC	Ethyl Benzene	100-41-4	1.3E+01	1.7E+02	3.7E+02		2.2E-01	5.0E+02	5.2E+03		NA
VOC	Methyl tert-butyl ether	1634-04-4	1.1E+04	5.1E+04	1.1E+01		1.8E-02	2.1E+04	4.4E+06		NA
VOC	Toluene	108-88-3	5.2E+01	5.3E+02	1.8E+02		1.9E-01	1.0E+03	2.1E+04		NA
VOC	1,2,4-Trimethylbenzene	95-63-6	3.3E+01	5.7E+01	9.0E+02		1.6E-01	3.0E+03	1.3E+04		NA
VOC	1,3,5-Trimethylbenzene	108-67-8	7.1E+01	4.8E+01	1.8E+03		1.5E-01	1.3E+04	2.8E+04		NA
VOC	Xylenes (total)	1330-20-7	2.1E+02	1.7E+02	3.9E+02		2.5E-01	8.4E+03	8.4E+04		NA
SVOC	Anthracene	120-12-7	4.0E+01	4.3E-02	3.0E+04		1.3E-03	1.2E+05	1.6E+04		NA
SVOC	Benzo(a)anthracene	56-55-3	1.3E-02	9.4E-03	4.0E+05		5.6E-05	5.2E+02	5.2E+00		NA
SVOC	Benzo(a)pyrene	50-32-8	1.3E-03	1.6E-03	1.0E+06		1.5E-05	1.3E+02	5.2E-01		NA
SVOC	Benzo(b)fluoranthene	205-99-2	1.3E-02	1.5E-03	1.2E+06		1.7E-03	1.6E+03	5.2E+00		NA
SVOC	Benzo(g,h,i)perylene	191-24-2	1.2E-02	2.6E-04	1.3E+07		1.1E-05	1.5E+04	4.8E+00		NA
SVOC	Chrysene	218-01-9	1.3E+00	1.6E-03	4.0E+05		1.5E-03	5.2E+04	5.2E+02		NA
SVOC	Ethanol	64-17-5			6.8E-01		1.7E-04				
SVOC	Fluorene	86-73-7	7.0E+00	2.0E+00	1.4E+04		1.4E-03	9.6E+03	2.8E+03		NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.3E-02	2.2E-05	3.4E+06		2.0E-05	4.5E+03	5.2E+00		NA
SVOC	Naphthalene	91-20-3	4.3E+01	3.1E+01	2.0E+03		1.2E-02	8.7E+03	1.7E+04		NA
SVOC	Phenanthrene	85-01-8	1.0E+00	1.2E+00	2.4E+04		1.4E-03	2.4E+03	4.0E+02		NA
SVOC	Pyrene	129-00-0	3.0E+00	1.4E-01	1.1E+05		2.0E-04	3.2E+04	1.2E+03		NA
SVOC	Tetraethylene Glycol	112-60-7	1.9E+05	1.0E+06	3.0E-02		1.6E-11	1.2E+05	7.7E+07		NA
INORG	Lead	7439-92-1	2.5E+00			9.0E+02		4.5E+04	1.0E+03	4.5E+04	EQ

Attachment 6

Table 12

Soil Migration to Groundwater Criteria Based on the GW MtSW RBSL

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{\text{soil-MtGW-Eq}}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{\text{soil-MtGW-Lt}}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 7

Nonpotable Groundwater Use Calculations

Table 1 – Normalized Vapor Flux to Outdoor Air from Residential Kiddie Pool

Table 2 – Nonsteady State Dermal Absorption of Chemicals from Water in Residential Kiddie Pool

Table 3 – Dispersion Factor to Outdoor Air

Table 4a – Unit Risk Calculations for Exposure of Resident to Groundwater in Kiddie Pools

Table 4b – Unit Hazard Quotient Calculations for Exposure of Resident to Groundwater in Kiddie Pools



Attachment 7

Table 1

Normalized Vapor Flux to Outdoor Air from Residential Kiddie Pool

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	H (unitless)	D _{air} (m ² /d)	D _{water} (m ² /d)	Sc _L (unitless)	Sc _G (unitless)	k _L (m/s)	k _G (m/s)	K _L (cm/s)	C _{avg} /C ₀ (unitless)	J _L (L/m ² -s)
VOC	Benzene	71-43-2	1.7E-01	7.6E-01	8.5E-05	9.1E+02	1.7E+00	5.73E-06	9.43E-03	5.71E-06	4.10E-01	2.34E-03
VOC	Cumene	98-82-8	3.3E-01	5.6E-01	6.1E-05	1.3E+03	2.3E+00	5.02E-06	7.69E-03	5.01E-06	4.48E-01	2.25E-03
VOC	1,2-Dibromoethane	106-93-4	2.4E-02	3.7E-01	7.3E-05	1.1E+03	3.5E+00	5.39E-06	5.83E-03	5.18E-06	4.38E-01	2.27E-03
VOC	1,2-Dichloroethane	107-06-2	2.9E-02	9.0E-01	8.6E-05	9.0E+02	1.5E+00	5.75E-06	1.05E-02	5.64E-06	4.13E-01	2.33E-03
VOC	Ethyl Benzene	100-41-4	2.2E-01	6.5E-01	6.7E-05	1.1E+03	2.0E+00	5.22E-06	8.47E-03	5.20E-06	4.37E-01	2.28E-03
VOC	Methyl tert-butyl ether	1634-04-4	1.8E-02	7.4E-01	8.7E-05	8.8E+02	1.8E+00	5.80E-06	9.28E-03	5.61E-06	4.15E-01	2.33E-03
VOC	Toluene	108-88-3	1.9E-01	7.5E-01	7.4E-05	1.0E+03	1.7E+00	5.43E-06	9.35E-03	5.41E-06	4.26E-01	2.30E-03
VOC	1,2,4-Trimethylbenzene	95-63-6	1.6E-01	5.2E-01	6.8E-05	1.1E+03	2.5E+00	5.25E-06	7.34E-03	5.23E-06	4.36E-01	2.28E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	1.5E-01	5.2E-01	7.5E-05	1.0E+03	2.5E+00	5.45E-06	7.31E-03	5.42E-06	4.25E-01	2.30E-03
VOC	Xylenes (total)	1330-20-7	2.5E-01	6.7E-01	7.6E-05	1.0E+03	1.9E+00	5.46E-06	8.69E-03	5.45E-06	4.24E-01	2.31E-03
SVOC	Anthracene	120-12-7	1.3E-03	2.8E-01	6.7E-05	1.2E+03	4.7E+00	5.20E-06	4.83E-03	2.85E-06	6.12E-01	1.74E-03
SVOC	Benzo(a)anthracene	56-55-3	5.6E-05	4.4E-01	7.8E-05	9.9E+02	3.0E+00	5.53E-06	6.54E-03	3.41E-07	9.38E-01	
SVOC	Benzo(a)pyrene	50-32-8	1.5E-05	3.7E-01	7.8E-05	9.9E+02	3.5E+00	5.53E-06	5.83E-03	8.58E-08	9.84E-01	
SVOC	Benzo(b)fluoranthene	205-99-2	1.7E-03	2.0E-01	4.8E-05	1.6E+03	6.7E+00	4.56E-06	3.79E-03	2.64E-06	6.32E-01	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.1E-05	1.9E-01	4.5E-05	1.7E+03	6.9E+00	4.46E-06	3.69E-03	4.02E-08	9.92E-01	
SVOC	Chrysene	218-01-9	1.5E-03	2.1E-01	5.4E-05	1.4E+03	6.1E+00	4.76E-06	4.03E-03	2.65E-06	6.32E-01	
SVOC	Ethanol	64-17-5	1.7E-04	1.1E+00	1.1E-04	6.9E+02	1.2E+00	6.44E-06	1.18E-02	1.56E-06	7.55E-01	
SVOC	Fluorene	86-73-7	1.4E-03	3.1E-01	6.8E-05	1.1E+03	4.2E+00	5.24E-06	5.21E-03	3.04E-06	5.95E-01	1.81E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.0E-05	1.6E-01	4.9E-05	1.6E+03	7.9E+00	4.59E-06	3.38E-03	6.75E-08	9.87E-01	
SVOC	Naphthalene	91-20-3	1.2E-02	5.1E-01	6.5E-05	1.2E+03	2.6E+00	5.13E-06	7.21E-03	4.85E-06	4.58E-01	2.22E-03
SVOC	Phenanthrene	85-01-8	1.4E-03	3.2E-01	6.5E-05	1.2E+03	4.0E+00	5.13E-06	5.32E-03	3.04E-06	5.94E-01	1.81E-03
SVOC	Pyrene	129-00-0	2.0E-04	2.4E-01	6.3E-05	1.2E+03	5.5E+00	5.06E-06	4.29E-03	7.35E-07	8.73E-01	
SVOC	Tetraethylene Glycol	112-60-7	1.6E-11	4.4E-01	7.0E-05	1.1E+03	3.0E+00	5.28E-06	6.52E-03	1.06E-13	1.00E+00	
INORG	Lead	7439-92-1										

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Table 1

Normalized Vapor Flux to Outdoor Air from Residential Kiddie Pool

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes: Water density (g/cm ³)	ρ_w	1.00E+00
Water viscosity (g/cm-s)	ν_w	8.93E-03
Air density (g/cm ³)	ρ_a	1.20E-03
Air viscosity (g/cm-s)	ν_a	1.81E-04
Wind speed (mph)	u_{10}	9.3
Wind speed (m/s)	u_{10}	4.2
Friction velocity (m/s)	u	0.123
Pool effective diameter (m)	d_e	2.1
Pool water surface area (m ²)	A	3.3
Pool water depth (m)	d	0.23
Pool water volume (m ³)	V	0.76
Fetch-to-depth ratio	F/D	9.0
Averaging period (days)	t	1.0

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Table 2

Nonsteady State Dermal Absorption of Chemicals from Water in Residential Kiddie Pool

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	MW (g/mole)	FA (unitless)	K _p (cm/hr)	B (unitless)	t (hr)	c	b	ts (hr)	DA (L/cm ² -event)
VOC	Benzene	71-43-2	7.8E+01	1.0E+00	1.5E-02	5.0E-02	2.9E-01	3.7E-01	3.3E-01	6.9E-01	3.70E-05
VOC	Cumene	98-82-8	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	1,2-Dibromoethane	106-93-4	1.9E+02	1.0E+00	1.6E-03	8.4E-03	1.2E+00	3.4E-01	3.1E-01	2.8E+00	6.81E-06
VOC	1,2-Dichloroethane	107-06-2	9.9E+01	1.0E+00	4.1E-03	1.6E-02	3.8E-01	3.4E-01	3.1E-01	9.0E-01	1.13E-05
VOC	Ethyl Benzene	100-41-4	1.1E+02	1.0E+00	4.8E-02	1.9E-01	4.1E-01	4.7E-01	4.3E-01	9.9E-01	1.27E-04
VOC	Methyl tert-butyl ether	1634-04-4	8.8E+01	1.0E+00	3.3E-03	1.2E-02	3.3E-01	3.4E-01	3.1E-01	7.9E-01	8.84E-06
VOC	Toluene	108-88-3	9.2E+01	1.0E+00	3.2E-02	1.2E-01	3.5E-01	4.2E-01	3.8E-01	8.3E-01	8.08E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	1,3,5-Trimethylbenzene	108-67-8	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	Xylenes (total)	1330-20-7	1.1E+02	1.0E+00	5.0E-02	2.0E-01	4.1E-01	4.8E-01	4.4E-01	9.9E-01	1.32E-04
SVOC	Anthracene	120-12-7	1.8E+02	1.0E+00			1.0E+00	3.3E-01	3.0E-01	2.5E+00	
SVOC	Benzo(a)anthracene	56-55-3	2.3E+02	9.0E-01			2.0E+00	3.3E-01	3.0E-01	4.8E+00	
SVOC	Benzo(a)pyrene	50-32-8	2.5E+02	8.0E-01			2.7E+00	3.3E-01	3.0E-01	6.5E+00	
SVOC	Benzo(b)fluoranthene	205-99-2	2.5E+02	8.0E-01			2.7E+00	3.3E-01	3.0E-01	6.5E+00	
SVOC	Benzo(g,h,i)perylene	191-24-2	2.8E+02	7.0E-01			3.7E+00	3.3E-01	3.0E-01	8.9E+00	
SVOC	Chrysene	218-01-9	2.3E+02	9.0E-01			2.0E+00	3.3E-01	3.0E-01	4.8E+00	
SVOC	Ethanol	64-17-5	4.6E+01	1.0E+00	5.5E-04	1.4E-03	1.9E-01	3.3E-01	3.0E-01	4.6E-01	1.30E-06
SVOC	Fluorene	86-73-7	1.7E+02	1.0E+00			9.0E-01	3.3E-01	3.0E-01	2.2E+00	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.8E+02	7.0E-01			3.7E+00	3.3E-01	3.0E-01	8.9E+00	
SVOC	Naphthalene	91-20-3	1.3E+02	1.0E+00			5.5E-01	3.3E-01	3.0E-01	1.3E+00	
SVOC	Phenanthrene	85-01-8	1.8E+02	1.0E+00			1.0E+00	3.3E-01	3.0E-01	2.5E+00	
SVOC	Pyrene	129-00-0	2.0E+02	1.0E+00			1.4E+00	3.3E-01	3.0E-01	3.4E+00	
SVOC	Tetraethylene Glycol	112-60-7	1.9E+02	1.0E+00			1.3E+00	3.3E-01	3.0E-01	3.1E+00	
INORG	Lead	7439-92-1	2.1E+02		1.0E-04		1.5E+00	3.3E-01	3.0E-01	3.7E+00	2.00E-07

Notes:

Event Time hours t 2

K_p capped at 1 cm/hr (USEPA 1992).

The dermal absorbed dose for inorganic chemicals is estimated using a steady-state approach (USEPA 2004, Equation 3.4) and for organic chemicals is estimated using a nonsteady-state approach (USEPA 2004, Equations 3.2 and 3.3).

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Table 3

Dispersion Factor to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Parameter	Units	Value
Correlation coefficient city		Philadelphia
Correlation coefficient A		14.0111
Correlation coefficient B		19.6154
Correlation coefficient C		225.3397

Source area	acres	0.0008
Groundwater averaging time for C/Q		1-Hour Max
C/Q	$(L/m^3)/(L/m^2-s)$	15.83

Note:

C/Q is estimated using the empirical correlation in USEPA's (2002) Supplemental Soil Screening Guidance.

Attachment 7

Table 4a

Unit Risk Calculations for Exposure of Residents to Groundwater in Kiddie Pools

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	ADAF	C _{gw} (mg/l)	Incidental Ingestion				Dermal Contact					Vapor Inhalation				All Routes Risk
						LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	f _{oral}	Risk	DA (L/cm ² -event)	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	f _{oral}	Risk	C _{air} (mg/m ³)	URF (mg/m ³) ⁻¹	f _{inh}	Risk	
VOC	Benzene	71-43-2	A	N	1.00E+00	1.06E-04	5.5E-02		5.8E-06	3.70E-05	4.65E-04	5.5E-02		2.6E-05	3.70E-02	7.8E-03		2.4E-06	3.4E-05
VOC	Cumene	98-82-8	D	N	1.00E+00	1.16E-04									3.56E-02				
VOC	1,2-Dibromoethane	106-93-4	LC	N	1.00E+00	1.13E-04	2.0E+00		2.3E-04	6.81E-06	9.15E-05	2.0E+00		1.8E-04	3.60E-02	6.0E-01		1.8E-04	5.8E-04
VOC	1,2-Dichloroethane	107-06-2	B2	N	1.00E+00	1.06E-04	9.1E-02		9.7E-06	1.13E-05	1.43E-04	9.1E-02		1.3E-05	3.69E-02	2.6E-02		7.8E-06	3.1E-05
VOC	Ethyl Benzene	100-41-4	D	N	1.00E+00	1.13E-04				1.27E-04	1.70E-03				3.60E-02				
VOC	Methyl tert-butyl ether	1634-04-4	C	N	1.00E+00	1.07E-04	1.8E-03		1.9E-07	8.84E-06	1.12E-04	1.8E-03		2.0E-07	3.68E-02	2.6E-04		7.8E-08	4.7E-07
VOC	Toluene	108-88-3	ID	N	1.00E+00	1.10E-04				8.08E-05	1.05E-03				3.65E-02				
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	N	1.00E+00	1.12E-04									3.61E-02				
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	N	1.00E+00	1.10E-04									3.65E-02				
VOC	Xylenes (total)	1330-20-7	ID	N	1.00E+00	1.09E-04				1.32E-04	1.71E-03				3.65E-02				
SVOC	Anthracene	120-12-7	ID	N	1.00E+00	1.58E-04									2.76E-02				
SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.00E+00	2.42E-04	1.0E-01	1	9.5E-05			1.0E-01	1			6.0E-02	1		9.5E-05
SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.00E+00	2.54E-04	1.0E+00	1	1.0E-03			1.0E+00	1			6.0E-01	1		1.0E-03
SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.00E+00	1.63E-04	1.0E-01	1	6.4E-05			1.0E-01	1			6.0E-02	1		6.4E-05
SVOC	Benzo(g,h,i)perylene	191-24-2	D	N	1.00E+00	2.56E-04													
SVOC	Chrysene	218-01-9	B2	Y	1.00E+00	1.63E-04	1.0E-03	1	6.4E-07			1.0E-03	1			6.0E-04	1		6.4E-07
SVOC	Ethanol	64-17-5		N	1.00E+00	1.95E-04				1.30E-06	3.01E-05								
SVOC	Fluorene	86-73-7	D	N	1.00E+00	1.53E-04									2.86E-02				
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y	1.00E+00	2.54E-04	1.0E-01	1	1.0E-04			1.0E-01	1			6.0E-02	1		1.0E-04
SVOC	Naphthalene	91-20-3	C	N	1.00E+00	1.18E-04	1.2E-01		1.4E-05			1.2E-01			3.52E-02	3.4E-02		9.7E-06	2.4E-05
SVOC	Phenanthrene	85-01-8	D	N	1.00E+00	1.53E-04									2.86E-02				
SVOC	Pyrene	129-00-0	NC	N	1.00E+00	2.25E-04													
SVOC	Tetraethylene Glycol	112-60-7		N	1.00E+00	2.58E-04													
INORG	Lead	7439-92-1	B2	N	1.00E+00	2.58E-04				2.00E-07	6.13E-06								

Notes:
 f_{oral} and f_{inh} are the fraction of the oral and inhalation toxicity values, respectively, that USEPA identified as having a mutagenic mode of action.

Attachment 7

Table 4b

Hazard Quotient Calculations for Exposure of Residents to Groundwater in Kiddie Pools

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{gw} (mg/L)	Incidental Ingestion			Dermal Contact				Vapor Inhalation			All Routes
				ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	DA (L/cm ² - event)	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	HQ
VOC	Benzene	71-43-2	1.00E+00	2.84E-04	1.0E-02	2.8E-02	3.70E-05	1.25E-03	1.0E-02	1.3E-01	3.70E-02	9.0E-02	9.0E-03	1.6E-01
VOC	Cumene	98-82-8	1.00E+00	3.11E-04	4.0E-01	7.8E-04			4.0E-01		3.56E-02	4.0E-01	1.9E-03	2.7E-03
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	3.04E-04	9.0E-03	3.4E-02	6.81E-06	2.46E-04	9.0E-03	2.7E-02	3.60E-02	9.0E-03	8.8E-02	1.5E-01
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	2.87E-04	2.0E-02	1.4E-02	1.13E-05	3.85E-04	2.0E-02	1.9E-02	3.69E-02	7.0E-02	1.2E-02	4.5E-02
VOC	Ethyl Benzene	100-41-4	1.00E+00	3.03E-04	1.0E-01	3.0E-03	1.27E-04	4.58E-03	1.0E-01	4.6E-02	3.60E-02	9.0E+00	8.8E-05	4.9E-02
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	2.88E-04	3.0E-01	9.6E-04	8.84E-06	3.03E-04	3.0E-01	1.0E-03	3.68E-02	3.0E+00	2.7E-04	2.2E-03
VOC	Toluene	108-88-3	1.00E+00	2.95E-04	8.0E-01	3.7E-04	8.08E-05	2.84E-03	8.0E-01	3.5E-03	3.65E-02	5.0E+00	1.6E-04	4.1E-03
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	3.02E-04	4.0E-02	7.6E-03			4.0E-02		3.61E-02	2.0E-01	4.0E-03	1.2E-02
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	2.95E-04	4.0E-02	7.4E-03			4.0E-02		3.65E-02	2.0E-01	4.0E-03	1.1E-02
VOC	Xylenes (total)	1330-20-7	1.00E+00	2.94E-04	2.0E-01	1.5E-03	1.32E-04	4.61E-03	2.0E-01	2.3E-02	3.65E-02	3.0E-01	2.7E-03	2.7E-02
SVOC	Anthracene	120-12-7	1.00E+00	4.25E-04	1.0E+00	4.2E-04			1.0E+00		2.76E-02			4.2E-04
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00	6.51E-04										
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00	6.83E-04	3.0E-04	2.3E+00			3.0E-04			2.0E-06		2.3E+00
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00	4.39E-04										
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00	6.88E-04	3.0E-01	2.3E-03			3.0E-01					2.3E-03
SVOC	Chrysene	218-01-9	1.00E+00	4.38E-04										
SVOC	Ethanol	64-17-5	1.00E+00	5.24E-04	6.2E+01	8.4E-06	1.30E-06	8.10E-05	6.2E+01	1.3E-06		1.9E+01		9.8E-06
SVOC	Fluorene	86-73-7	1.00E+00	4.13E-04	4.0E-01	1.0E-03			4.0E-01		2.86E-02			1.0E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00	6.85E-04										
SVOC	Naphthalene	91-20-3	1.00E+00	3.18E-04	2.0E-01	1.6E-03			2.0E-01		3.52E-02	3.0E-03	2.6E-01	2.6E-01
SVOC	Phenanthrene	85-01-8	1.00E+00	4.12E-04	3.0E-01	1.4E-03			3.0E-01		2.86E-02			1.4E-03
SVOC	Pyrene	129-00-0	1.00E+00	6.06E-04	3.0E-01	2.0E-03			3.0E-01					2.0E-03
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00	6.94E-04	2.0E+00	3.5E-04			2.0E+00					3.5E-04
INORG	Lead	7439-92-1	1.00E+00	6.94E-04			2.00E-07	1.65E-05						

Attachment 8

Single-Chemical Risk Estimates

Table 1 – Upper-Bound Single-Chemical Cancer Risk and Noncancer HQ for Soil

Table 2 – RME Single-Chemical Cancer Risk and Noncancer HQ for Soil

Table 3 – Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil

Table 4 – Upper-Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Groundwater

Table 5 – Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Groundwater



Attachment 8

Table 1

Upper-Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Chem Group	Chemical	CASRN	Carc Class	Max Detect from All Depths (mg/kg)	Routine Worker				Maintenance Worker		Construction Worker		Off-Site Resident		Soil Migration to GW									
						Outdoor Activities		Vapor Intrusion		Outdoor Activities		Outdoor Activities		Outdoor Activities		Nonpotable Use		R. Worker GW Vol OA		R. Worker GW VI		Const. W GW Contact		Off-Site Res GW VI	
						Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ
Tank Group 04	VOC	Benzene	71-43-2	A	7.10E+00	9.5E-07	1.1E-02	1.3E-04	1.5E+00	1.5E-07	4.4E-03	8.2E-07	8.2E-02	3.8E-06	4.3E-02	6.0E-07	2.9E-03	NC	NC	3.9E-08	4.6E-04	4.2E-09	4.5E-04	6.3E-07	7.2E-03
Tank Group 04	VOC	Cumene	98-82-8	D	1.50E+01	NC	1.5E-03	NC	2.5E-01	NC	5.2E-04	NC	1.7E-02	NC	5.8E-03	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	VOC	Ethyl Benzene	100-41-4	D	6.60E+01	NC	2.9E-03	NC	4.3E-01	NC	1.0E-03	NC	5.2E-03	NC	1.1E-02	NC	8.1E-03	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	VOC	Methyl tert-butyl ether	1634-04-4	C	2.00E-02	8.4E-11	3.1E-07	1.2E-08	4.4E-05	1.3E-11	1.2E-07	5.6E-11	5.1E-06	3.3E-10	1.2E-06	2.4E-11	1.1E-07	NC	NC	2.4E-12	8.6E-09	2.8E-13	2.6E-08	3.4E-11	1.2E-07
Tank Group 04	VOC	Toluene	108-88-3	ID	1.50E+01	NC	1.9E-04	NC	2.0E-02	NC	6.8E-05	NC	2.3E-03	NC	5.2E-04	NC	1.5E-04	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	9.20E+01	NC	5.1E-02	NC	1.0E+01	NC	1.6E-02	NC	1.3E-01	NC	2.0E-01	NC	NC	NC	NC	NC	NC	NC	NC	NC	3.7E-02
Tank Group 04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	3.30E+01	NC	1.5E-02	NC	3.6E+00	NC	4.3E-03	NC	3.3E-02	NC	5.7E-02	NC	NC	NC	NC	NC	NC	NC	NC	NC	1.4E-02
Tank Group 04	VOC	Xylenes (total)	1330-20-7	ID	1.97E+02	NC	8.1E-02	NC	1.3E+01	NC	3.0E-02	NC	3.9E-01	NC	3.2E-01	NC	1.3E-02	NC	NC	NC	NC	NC	NC	NC	5.7E-02
Tank Group 04	SVOC	Anthracene	120-12-7	ID	1.88E+00	NC	4.0E-06	NC	NC	NC	1.0E-06	NC	4.1E-06	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	SVOC	Benzo(a)anthracene	56-55-3	B2	4.50E+00	1.0E-07	NC	NC	NC	1.0E-08	NC	1.4E-08	NC	7.1E-11	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	SVOC	Benzo(a)pyrene	50-32-8	HC	7.20E+00	1.7E-06	1.6E-02	NC	NC	1.6E-07	8.8E-03	2.3E-07	9.3E-02	1.1E-09	9.2E-04	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	4.40E+00	1.0E-07	NC	NC	NC	1.0E-08	NC	1.4E-08	NC	6.9E-11	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	5.20E+00	NC	1.1E-04	NC	NC	NC	2.8E-05	NC	3.8E-05	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	SVOC	Chrysene	218-01-9	B2	4.40E+00	1.0E-09	NC	NC	NC	1.0E-10	NC	1.4E-10	NC	6.9E-13	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	SVOC	Fluorene	86-73-7	D	7.04E+00	NC	1.1E-04	NC	NC	NC	2.8E-05	NC	3.8E-05	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+01	2.3E-09	NC	NC	NC	2.3E-10	NC	3.1E-10	NC	1.6E-12	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	SVOC	Naphthalene	91-20-3	C	9.30E+00	1.1E-06	2.3E-02	6.3E-05	1.7E+00	1.1E-07	6.0E-03	2.6E-07	1.6E-01	3.5E-06	9.1E-02	5.6E-07	6.0E-03	NC	NC	NC	2.6E-03	NC	8.4E-03	1.3E-06	3.5E-02
Tank Group 04	SVOC	Phenanthrene	85-01-8	D	1.45E+01	NC	3.1E-04	NC	NC	NC	7.7E-05	NC	1.1E-04	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	SVOC	Pyrene	129-00-0	NC	1.48E+00	NC	3.2E-05	NC	NC	NC	7.8E-06	NC	1.1E-05	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tank Group 04	INORG	Lead	7439-92-1	B2	3.20E+03	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Notes:

Only constituents detected in each area are shown.

Single-chemical cancer risk and hazard quotient (HQ) estimates in excess of PADEP's thresholds for cumulative cancer risk and HI of 1E-4 and 1, respectively, are shaded and bold

Single-chemical cancer risk and HQ estimates in excess of 1/10 PADEP's thresholds for cumulative cancer risk or HI of 1E-4 and 1, respectively, are italic and bold

NC - Risk and HQ estimates were not calculated for detected chemicals with inadequate toxicity or physical/chemical parameters or where chemical concentrations were non-detect

The concentrations for the Xylene isomers (m/p and o) were summed to Xylenes (total).

GW - Groundwater

VI - Vapor intrusion

OA - Outdoor Air

Chem Group - chemical group

Carc Class - USEPA Weight-of-Evidence Cancer Classification

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-191-01	VOC	Benzene	71-43-2	A	Y		7.30E-04	3.65E-04	6.7E-09	8.0E-05
Tank Group 04	PB-191-01	VOC	Cumene	98-82-8	D	Y		1.40E-03	7.00E-04	NC	1.1E-05
Tank Group 04	PB-191-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		7.30E-04		NC	NC
Tank Group 04	PB-191-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.40E-03		NC	NC
Tank Group 04	PB-191-01	VOC	Ethyl Benzene	100-41-4	D	Y		1.40E-03	7.00E-04	NC	4.6E-06
Tank Group 04	PB-191-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.90E-03	1.45E-03	8.8E-10	3.2E-06
Tank Group 04	PB-191-01	VOC	Toluene	108-88-3	ID	Y		1.40E-03	7.00E-04	NC	9.2E-07
Tank Group 04	PB-191-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.90E-03	1.45E-03	NC	1.6E-04
Tank Group 04	PB-191-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.90E-03	1.45E-03	NC	1.6E-04
Tank Group 04	PB-191-01	VOC	Xylenes (total)	1330-20-7	ID	Y		2.90E-03	1.45E-03	NC	9.5E-05
Tank Group 04	PB-191-01	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-191-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.70E-01		1.70E-01	NC	NC
Tank Group 04	PB-191-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.50E-01		1.50E-01	NC	NC
Tank Group 04	PB-191-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.90E-01		1.90E-01	NC	NC
Tank Group 04	PB-191-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	8.80E-02		8.80E-02	NC	NC
Tank Group 04	PB-191-01	SVOC	Chrysene	218-01-9	B2	Y	1.60E-01		1.60E-01	NC	NC
Tank Group 04	PB-191-01	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-191-01	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y	1.00E-01		1.00E-01	NC	NC
Tank Group 04	PB-191-01	SVOC	Naphthalene	91-20-3	C	Y	3.90E-02		3.90E-02	2.6E-07	7.3E-03
Tank Group 04	PB-191-01	SVOC	Phenanthrene	85-01-8	D	Y	1.10E-01		1.10E-01	NC	NC
Tank Group 04	PB-191-01	SVOC	Pyrene	129-00-0	NC	Y	2.20E-01		2.20E-01	NC	NC
Tank Group 04	PB-191-01	INORG	Lead	7439-92-1	B2	Y	1.10E+02		1.10E+02	NC	NC
Tank Group 04	PB-191-02	VOC	Benzene	71-43-2	A	Y		9.40E-03	9.40E-03	1.7E-07	2.1E-03
Tank Group 04	PB-191-02	VOC	Cumene	98-82-8	D	Y		2.20E-03	2.20E-03	NC	3.6E-05
Tank Group 04	PB-191-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		1.20E-03		NC	NC
Tank Group 04	PB-191-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		2.40E-03		NC	NC
Tank Group 04	PB-191-02	VOC	Ethyl Benzene	100-41-4	D	Y	1.20E-03		1.20E-03	NC	7.9E-06
Tank Group 04	PB-191-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		4.90E-03	2.45E-03	1.5E-09	5.3E-06
Tank Group 04	PB-191-02	VOC	Toluene	108-88-3	ID	Y	1.50E-03		1.50E-03	NC	2.0E-06
Tank Group 04	PB-191-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.30E-03		1.30E-03	NC	1.4E-04
Tank Group 04	PB-191-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	5.40E-04		5.40E-04	NC	5.9E-05
Tank Group 04	PB-191-02	VOC	Xylenes (total)	1330-20-7	ID	Y	4.70E-03		4.70E-03	NC	3.1E-04
Tank Group 04	PB-191-02	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-191-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	7.70E-02		7.70E-02	NC	NC
Tank Group 04	PB-191-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	7.10E-02		7.10E-02	NC	NC
Tank Group 04	PB-191-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	8.90E-02		8.90E-02	NC	NC
Tank Group 04	PB-191-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	6.20E-02		6.20E-02	NC	NC
Tank Group 04	PB-191-02	SVOC	Chrysene	218-01-9	B2	Y	8.00E-02		8.00E-02	NC	NC
Tank Group 04	PB-191-02	SVOC	Fluorene	86-73-7	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-191-02	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y	5.50E-02		5.50E-02	NC	NC
Tank Group 04	PB-191-02	SVOC	Naphthalene	91-20-3	C	Y	6.30E-02		6.30E-02	4.3E-07	1.2E-02
Tank Group 04	PB-191-02	SVOC	Phenanthrene	85-01-8	D	Y	9.20E-02		9.20E-02	NC	NC
Tank Group 04	PB-191-02	SVOC	Pyrene	129-00-0	NC	Y	1.00E-01		1.00E-01	NC	NC
Tank Group 04	PB-191-02	INORG	Lead	7439-92-1	B2	Y	4.68E+01		4.68E+01	NC	NC
Tank Group 04	PB-191-03	VOC	Benzene	71-43-2	A	Y		6.60E-04	3.30E-04	6.0E-09	7.2E-05
Tank Group 04	PB-191-03	VOC	Cumene	98-82-8	D	Y		1.30E-03	6.50E-04	NC	1.1E-05
Tank Group 04	PB-191-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.60E-04		NC	NC
Tank Group 04	PB-191-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-191-03	VOC	Ethyl Benzene	100-41-4	D	Y	1.30E-03		6.50E-04	NC	4.3E-06
Tank Group 04	PB-191-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.60E-03	1.30E-03	7.9E-10	2.8E-06
Tank Group 04	PB-191-03	VOC	Toluene	108-88-3	ID	Y	1.30E-03		6.50E-04	NC	8.5E-07
Tank Group 04	PB-191-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.60E-03		1.30E-03	NC	1.4E-04
Tank Group 04	PB-191-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.60E-03		1.30E-03	NC	1.4E-04
Tank Group 04	PB-191-03	VOC	Xylenes (total)	1330-20-7	ID	Y	2.60E-03		1.30E-03	NC	8.5E-05
Tank Group 04	PB-191-03	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-191-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.10E-01		1.10E-01	NC	NC
Tank Group 04	PB-191-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.20E-01		1.20E-01	NC	NC
Tank Group 04	PB-191-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.30E-01		1.30E-01	NC	NC
Tank Group 04	PB-191-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	6.00E-02		6.00E-02	NC	NC
Tank Group 04	PB-191-03	SVOC	Chrysene	218-01-9	B2	Y	1.00E-01		1.00E-01	NC	NC
Tank Group 04	PB-191-03	SVOC	Fluorene	86-73-7	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-191-03	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y	7.00E-02		7.00E-02	NC	NC
Tank Group 04	PB-191-03	SVOC	Naphthalene	91-20-3	C	Y		2.10E-01	1.05E-01	7.1E-07	2.0E-02
Tank Group 04	PB-191-03	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-191-03	SVOC	Pyrene	129-00-0	NC	Y	1.60E-01		1.60E-01	NC	NC
Tank Group 04	PB-191-03	INORG	Lead	7439-92-1	B2	Y	1.98E+01		1.98E+01	NC	NC
Tank Group 04	PB-191-04	VOC	Benzene	71-43-2	A	Y	1.20E-03		1.20E-03	2.2E-08	2.6E-04
Tank Group 04	PB-191-04	VOC	Cumene	98-82-8	D	Y	1.50E-03		1.50E-03	NC	2.5E-05
Tank Group 04	PB-191-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.50E-04		NC	NC
Tank Group 04	PB-191-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-191-04	VOC	Ethyl Benzene	100-41-4	D	Y	1.00E-03		1.00E-03	NC	6.5E-06
Tank Group 04	PB-191-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.60E-03	1.30E-03	7.9E-10	2.8E-06
Tank Group 04	PB-191-04	VOC	Toluene	108-88-3	ID	Y	1.30E-03		6.50E-04	NC	8.5E-07
Tank Group 04	PB-191-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.30E-03		2.30E-03	NC	2.5E-04
Tank Group 04	PB-191-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.30E-03		1.30E-03	NC	1.4E-04
Tank Group 04	PB-191-04	VOC	Xylenes (total)	1330-20-7	ID	Y	3.20E-03		3.20E-03	NC	2.1E-04
Tank Group 04	PB-191-04	SVOC	Anthracene	120-12-7	ID	Y	4.90E-02		4.90E-02	NC	NC
Tank Group 04	PB-191-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	9.50E-02		9.50E-02	NC	NC
Tank Group 04	PB-191-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	7.60E-02		7.60E-02	NC	NC
Tank Group 04	PB-191-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	9.90E-02		9.90E-02	NC	NC
Tank Group 04	PB-191-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	5.60E-02		5.60E-02	NC	NC
Tank Group 04	PB-191-04	SVOC	Chrysene	218-01-9	B2	Y	9.50E-02		9.50E-02	NC	NC
Tank Group 04	PB-191-04	SVOC	Fluorene	86-73-7	D	Y	5.40E-02		5.40E-02	NC	NC
Tank Group 04	PB-191-04	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y	5.60E-02		5.60E-02	NC	NC
Tank Group 04	PB-191-04	SVOC	Naphthalene	91-20-3	C	Y	1.00E-01		1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-191-04	SVOC	Phenanthrene	85-01-8	D	Y	1.90E-01		1.90E-01	NC	NC
Tank Group 04	PB-191-04	SVOC	Pyrene	129-00-0	NC	Y	1.40E-01		1.40E-01	NC	NC
Tank Group 04	PB-191-04	INORG	Lead	7439-92-1	B2	Y	2.95E+02		2.95E+02	NC	NC
Tank Group 04	PB-191-05	VOC	Benzene	71-43-2	A	Y		5.80E-04	2.90E-04	5.3E-09	6.3E-05
Tank Group 04	PB-191-05	VOC	Cumene	98-82-8	D	Y	2.70E-04		2.70E-04	NC	4.4E-06
Tank Group 04	PB-191-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.80E-04		NC	NC
Tank Group 04	PB-191-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-191-05	VOC	Ethyl Benzene	100-41-4	D	Y	1.20E-03		6.00E-04	NC	3.9E-06
Tank Group 04	PB-191-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-191-05	VOC	Toluene	108-88-3	ID	Y	1.20E-03		6.00E-04	NC	7.9E-07
Tank Group 04	PB-191-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.30E-03		1.15E-03	NC	1.3E-04
Tank Group 04	PB-191-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.30E-03		1.15E-03	NC	1.3E-04
Tank Group 04	PB-191-05	VOC	Xylenes (total)	1330-20-7	ID	Y	2.30E-03		1.15E-03	NC	7.5E-05
Tank Group 04	PB-191-05	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-191-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.00E-01		5.00E-02	NC	NC
Tank Group 04	PB-191-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.40E-01		7.00E-02	NC	NC
Tank Group 04	PB-191-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.00E-01		5.00E-02	NC	NC
Tank Group 04	PB-191-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.40E-01		7.00E-02	NC	NC
Tank Group 04	PB-191-05	SVOC	Chrysene	218-01-9	B2	Y	1.00E-01		5.00E-02	NC	NC
Tank Group 04	PB-191-05	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-191-05	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y	1.40E-01				

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-191-06	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-191-06	SVOC	Anthracene	120-12-7	ID	Y		6.00E-01	3.00E-01	NC	NC
Tank Group 04	PB-191-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		6.00E-01	3.00E-01	NC	NC
Tank Group 04	PB-191-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		8.00E-01	4.00E-01	NC	NC
Tank Group 04	PB-191-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		6.00E-01	3.00E-01	NC	NC
Tank Group 04	PB-191-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		8.00E-01	4.00E-01	NC	NC
Tank Group 04	PB-191-06	SVOC	Chrysene	218-01-9	B2	Y		6.00E-01	3.00E-01	NC	NC
Tank Group 04	PB-191-06	SVOC	Fluorene	86-73-7	D	Y		1.00E+00	5.00E-01	NC	NC
Tank Group 04	PB-191-06	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y		8.00E-01	4.00E-01	NC	NC
Tank Group 04	PB-191-06	SVOC	Naphthalene	91-20-3	C	Y		1.00E+00	5.00E-01	3.4E-06	9.3E-02
Tank Group 04	PB-191-06	SVOC	Phenanthrene	85-01-8	D	Y		6.00E-01	3.00E-01	NC	NC
Tank Group 04	PB-191-06	SVOC	Pyrene	129-00-0	NC	Y		6.00E-01	3.00E-01	NC	NC
Tank Group 04	PB-191-06	INORG	Lead	7439-92-1	B2	Y	2.65E+01		2.65E+01	NC	NC
Tank Group 04	PB-191-07	VOC	Benzene	71-43-2	A	Y		9.05E-04	4.53E-04	8.3E-09	9.9E-05
Tank Group 04	PB-191-07	VOC	Cumene	98-82-8	D	Y	4.65E-03		4.65E-03	NC	7.6E-05
Tank Group 04	PB-191-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		9.05E-04		NC	NC
Tank Group 04	PB-191-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.80E-03		NC	NC
Tank Group 04	PB-191-07	VOC	Ethyl Benzene	100-41-4	D	Y		1.80E-03	9.00E-04	NC	5.9E-06
Tank Group 04	PB-191-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.55E-03	1.78E-03	1.1E-09	3.9E-06
Tank Group 04	PB-191-07	VOC	Toluene	108-88-3	ID	Y		1.80E-03	9.00E-04	NC	1.2E-06
Tank Group 04	PB-191-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.55E-03	1.78E-03	NC	1.9E-04
Tank Group 04	PB-191-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.55E-03	1.78E-03	NC	1.9E-04
Tank Group 04	PB-191-07	VOC	Xylenes (total)	1330-20-7	ID	Y		3.55E-03	1.78E-03	NC	1.2E-04
Tank Group 04	PB-191-07	SVOC	Anthracene	120-12-7	ID	Y	1.10E-01		1.10E-01	NC	NC
Tank Group 04	PB-191-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.35E-01		1.35E-01	NC	NC
Tank Group 04	PB-191-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.30E-01		1.30E-01	NC	NC
Tank Group 04	PB-191-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.15E-01		1.15E-01	NC	NC
Tank Group 04	PB-191-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.35E-01		1.35E-01	NC	NC
Tank Group 04	PB-191-07	SVOC	Chrysene	218-01-9	B2	Y	1.60E-01		1.60E-01	NC	NC
Tank Group 04	PB-191-07	SVOC	Fluorene	86-73-7	D	Y	5.25E-02		5.25E-02	NC	NC
Tank Group 04	PB-191-07	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y	9.50E-02		9.50E-02	NC	NC
Tank Group 04	PB-191-07	SVOC	Naphthalene	91-20-3	C	Y	1.65E-01		1.65E-01	1.1E-06	3.1E-02
Tank Group 04	PB-191-07	SVOC	Phenanthrene	85-01-8	D	Y	4.15E-01		4.15E-01	NC	NC
Tank Group 04	PB-191-07	SVOC	Pyrene	129-00-0	NC	Y	2.31E-01		2.31E-01	NC	NC
Tank Group 04	PB-191-07	INORG	Lead	7439-92-1	B2	Y	1.97E+02		1.97E+02	NC	NC
Tank Group 04	PB-191-08	VOC	Benzene	71-43-2	A	Y	3.00E-04		3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-191-08	VOC	Cumene	98-82-8	D	Y	3.00E-03		3.00E-03	NC	4.9E-05
Tank Group 04	PB-191-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.70E-04		NC	NC
Tank Group 04	PB-191-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-191-08	VOC	Ethyl Benzene	100-41-4	D	Y	2.10E-04		2.10E-04	NC	1.4E-06
Tank Group 04	PB-191-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-191-08	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-191-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	3.10E-03		3.10E-03	NC	3.4E-04
Tank Group 04	PB-191-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	6.60E-04		6.60E-04	NC	7.2E-05
Tank Group 04	PB-191-08	VOC	Xylenes (total)	1330-20-7	ID	Y	2.85E-03		2.85E-03	NC	1.9E-04
Tank Group 04	PB-191-08	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-191-08	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	4.70E-02		4.70E-02	NC	NC
Tank Group 04	PB-191-08	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-191-08	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	5.40E-02		5.40E-02	NC	NC
Tank Group 04	PB-191-08	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	4.30E-02		4.30E-02	NC	NC
Tank Group 04	PB-191-08	SVOC	Chrysene	218-01-9	B2	Y	5.20E-02		5.20E-02	NC	NC
Tank Group 04	PB-191-08	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-191-08	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y	3.10E-02		3.10E-02	NC	NC
Tank Group 04	PB-191-08	SVOC	Naphthalene	91-20-3	C	Y	5.90E-02		5.90E-02	4.0E-07	1.1E-02
Tank Group 04	PB-191-08	SVOC	Phenanthrene	85-01-8	D	Y	8.40E-02		8.40E-02	NC	NC
Tank Group 04	PB-191-08	SVOC	Pyrene	129-00-0	NC	Y	7.00E-02		7.00E-02	NC	NC
Tank Group 04	PB-191-08	INORG	Lead	7439-92-1	B2	Y	8.45E+01		8.45E+01	NC	NC
Tank Group 04	PB-826-01	VOC	Benzene	71-43-2	A	Y		6.90E-04	3.45E-04	6.3E-09	7.5E-05
Tank Group 04	PB-826-01	VOC	Cumene	98-82-8	D	Y		1.40E-03	7.00E-04	NC	1.1E-05
Tank Group 04	PB-826-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.90E-04		NC	NC
Tank Group 04	PB-826-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.40E-03		NC	NC
Tank Group 04	PB-826-01	VOC	Ethyl Benzene	100-41-4	D	Y		1.40E-03	7.00E-04	NC	4.6E-06
Tank Group 04	PB-826-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	3.20E-04		3.20E-04	1.9E-10	7.0E-07
Tank Group 04	PB-826-01	VOC	Toluene	108-88-3	ID	Y		1.40E-03	7.00E-04	NC	9.2E-07
Tank Group 04	PB-826-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.80E-03	1.40E-03	NC	1.5E-04
Tank Group 04	PB-826-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.80E-03	1.40E-03	NC	1.5E-04
Tank Group 04	PB-826-01	VOC	Xylenes (total)	1330-20-7	ID	Y		2.80E-03	1.40E-03	NC	9.2E-05
Tank Group 04	PB-826-01	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-826-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-826-01	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-01	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-826-01	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-826-01	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-01	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-01	INORG	Lead	7439-92-1	B2	Y	3.14E+00		3.14E+00	NC	NC
Tank Group 04	PB-826-02	VOC	Benzene	71-43-2	A	Y		5.20E-04	2.60E-04	4.7E-09	5.7E-05
Tank Group 04	PB-826-02	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-826-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-04		NC	NC
Tank Group 04	PB-826-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-826-02	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-826-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.00E-03		1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-826-02	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-826-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-826-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-826-02	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-826-02	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-02	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-02	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-826-02	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-826-02	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-02	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-02	INORG	Lead	7439-92-1	B2	Y	3.36E+00		3.36E+00	NC	NC
Tank Group 04	PB-826-03	VOC	Benzene	71-43-2	A	Y		6.30E-04	3.15E-04	5.7E-09	6.9E-05
Tank Group 04	PB-826-03	VOC	Cumene	98-82-8	D	Y		1.30E-03	6.50E-04	NC	1.1E-05
Tank Group 04	PB-826-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.30E-04		NC	NC
Tank Group 04	PB-826-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-826-03	VOC	Ethyl Benzene	100-41-4	D	Y		1.30E-03	6.50E-04	NC	4.3E-06
Tank Group 04	PB-826-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	2.00E-02		2.00E-02	1.2E-08	4.4E-05
Tank Group 04	PB-826-03	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-826-03	INORG	Lead	7439-92-1	B2	Y	3.14E+00		3.14E+00	NC	NC
Tank Group 04	PB-826-04	VOC	Benzene	71-43-2	A	Y		9.70E-04	4.85E-04	8.8E-09	1.1E-04
Tank Group 04	PB-826-04	VOC	Cumene	98-82-8	D	Y		1.90E-03	9.50E-04	NC	1.6E-05
Tank Group 04	PB-826-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		9.70E-04		NC	NC
Tank Group 04	PB-826-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.90E-03		NC	NC
Tank Group 04	PB-826-04	VOC	Ethyl Benzene	100-41-4	D	Y		1.90E-03	9.50E-04	NC	6.2E-06
Tank Group 04	PB-826-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.20E-03		1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-826-04	VOC	Toluene	108-88-3	ID	Y		1.90E-03	9.50E-04	NC	1.2E-06
Tank Group 04	PB-826-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.90E-03	1.95E-03	NC	2.1E-04
Tank Group 04	PB-826-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.90E-03	1.95E-03	NC	2.1E-04
Tank Group 04	PB-826-04	VOC	Xylenes (total)	1330-20-7	ID	Y		3.90E-03	1.95E-03	NC	1.3E-04
Tank Group 04	PB-826-04	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-04	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-04	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-826-04	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-826-04	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-04	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-04	INORG	Lead	7439-92-1	B2	Y	3.88E+00		3.88E+00	NC	NC
Tank Group 04	PB-826-05	VOC	Benzene	71-43-2	A	Y		5.50E-04	2.75E-04	5.0E-09	6.0E-05
Tank Group 04	PB-826-05	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-826-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.50E-04		NC	NC
Tank Group 04	PB-826-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-826-05	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-826-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-826-05	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-826-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-826-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-826-05	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-826-05	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-05	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-05	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-826-05	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-826-05	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-05	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-05	INORG	Lead	7439-92-1	B2	Y	3.46E+00		3.46E+00	NC	NC
Tank Group 04	PB-826-06	VOC	Benzene	71-43-2	A	Y		7.50E-04	3.75E-04	6.8E-09	8.2E-05
Tank Group 04	PB-826-06	VOC	Cumene	98-82-8	D	Y		1.50E-03	7.50E-04	NC	1.2E-05
Tank Group 04	PB-826-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		7.50E-04		NC	NC
Tank Group 04	PB-826-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.50E-03		NC	NC
Tank Group 04	PB-826-06	VOC	Ethyl Benzene	100-41-4	D	Y		1.50E-03	7.50E-04	NC	4.9E-06
Tank Group 04	PB-826-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.30E-02		1.30E-02	7.9E-09	2.8E-05
Tank Group 04	PB-826-06	VOC	Toluene	108-88-3	ID	Y		1.50E-03	7.50E-04	NC	9.8E-07
Tank Group 04	PB-826-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.00E-03	1.50E-03	NC	1.6E-04
Tank Group 04	PB-826-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.00E-03	1.50E-03	NC	1.6E-04
Tank Group 04	PB-826-06	VOC	Xylenes (total)	1330-20-7	ID	Y		3.00E-03	1.50E-03	NC	9.8E-05
Tank Group 04	PB-826-06	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-06	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-06	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-826-06	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-826-06	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-06	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-06	INORG	Lead	7439-92-1	B2	Y	8.10E+00		8.10E+00	NC	NC
Tank Group 04	PB-826-07	VOC	Benzene	71-43-2	A	Y		6.10E-04	3.05E-04	5.6E-09	6.7E-05
Tank Group 04	PB-826-07	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-826-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.10E-04		NC	NC
Tank Group 04	PB-826-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-826-07	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-826-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.60E-02		1.60E-02	9.7E-09	3.5E-05
Tank Group 04	PB-826-07	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-826-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-826-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-826-07	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-826-07	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-07	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-07	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-826-07	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-826-07	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-07	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-07	INORG	Lead	7439-92-1	B2	Y	3.19E+00		3.19E+00	NC	NC
Tank Group 04	PB-826-08	VOC	Benzene	71-43-2	A	Y	3.30E-04		3.30E-04	6.0E-09	7.2E-05
Tank Group 04	PB-826-08	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-826-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-826-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-826-08	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-826-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-826-08	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-826-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-826-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-826-08	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-826-08	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-08	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-08	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-826-08	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-08	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-826-08	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-08	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-826-08	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-826-08	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-08	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-08	INORG	Lead	7439-92-1	B2	Y	4.67E+00		4.67E+00	NC	NC
Tank Group 04	PB										

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-826-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-826-09	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-09	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-826-09	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-826-09	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-09	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-826-09	INORG	Lead	7439-92-1	B2	Y	5.55E+00		5.55E+00	NC	NC
Tank Group 04	PB-826-10	VOC	Benzene	71-43-2	A	Y		7.30E-04	3.65E-04	6.7E-09	8.0E-05
Tank Group 04	PB-826-10	VOC	Cumene	98-82-8	D	Y		1.50E-03	7.50E-04	NC	1.2E-05
Tank Group 04	PB-826-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		7.30E-04		NC	NC
Tank Group 04	PB-826-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.50E-03		NC	NC
Tank Group 04	PB-826-10	VOC	Ethyl Benzene	100-41-4	D	Y		1.50E-03	7.50E-04	NC	4.9E-06
Tank Group 04	PB-826-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.90E-03	1.45E-03	8.8E-10	3.2E-06
Tank Group 04	PB-826-10	VOC	Toluene	108-88-3	ID	Y		1.50E-03	7.50E-04	NC	9.8E-07
Tank Group 04	PB-826-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.90E-03	1.45E-03	NC	1.6E-04
Tank Group 04	PB-826-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.90E-03	1.45E-03	NC	1.6E-04
Tank Group 04	PB-826-10	VOC	Xylenes (total)	1330-20-7	ID	Y		2.90E-03	1.45E-03	NC	9.5E-05
Tank Group 04	PB-826-10	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-10	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-10	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-826-10	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-826-10	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-10	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-10	INORG	Lead	7439-92-1	B2	Y	3.72E+00		3.72E+00	NC	NC
Tank Group 04	PB-826-11	VOC	Benzene	71-43-2	A	Y		5.90E-04	2.95E-04	5.4E-09	6.4E-05
Tank Group 04	PB-826-11	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-826-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.90E-04		NC	NC
Tank Group 04	PB-826-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-826-11	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-826-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-826-11	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-826-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-826-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-826-11	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-826-11	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-11	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-11	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-826-11	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-826-11	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-11	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-11	INORG	Lead	7439-92-1	B2	Y	3.61E+00		3.61E+00	NC	NC
Tank Group 04	PB-826-12	VOC	Benzene	71-43-2	A	Y		5.50E-04	2.75E-04	5.0E-09	6.0E-05
Tank Group 04	PB-826-12	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-826-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.50E-04		NC	NC
Tank Group 04	PB-826-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-826-12	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-826-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-826-12	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-826-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-826-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-826-12	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-826-12	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-12	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-12	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-826-12	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-826-12	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-12	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-826-12	INORG	Lead	7439-92-1	B2	Y	3.00E+00		3.00E+00	NC	NC
Tank Group 04	PB-826-13	VOC	Benzene	71-43-2	A	Y		7.00E-04	3.50E-04	6.4E-09	7.6E-05
Tank Group 04	PB-826-13	VOC	Cumene	98-82-8	D	Y		1.40E-03	7.00E-04	NC	1.1E-05
Tank Group 04	PB-826-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		7.00E-04		NC	NC
Tank Group 04	PB-826-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.40E-03		NC	NC
Tank Group 04	PB-826-13	VOC	Ethyl Benzene	100-41-4	D	Y		1.40E-03	7.00E-04	NC	4.6E-06
Tank Group 04	PB-826-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.80E-03	1.40E-03	8.5E-10	3.1E-06
Tank Group 04	PB-826-13	VOC	Toluene	108-88-3	ID	Y		1.40E-03	7.00E-04	NC	9.2E-07
Tank Group 04	PB-826-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.80E-03	1.40E-03	NC	1.5E-04
Tank Group 04	PB-826-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.80E-03	1.40E-03	NC	1.5E-04
Tank Group 04	PB-826-13	VOC	Xylenes (total)	1330-20-7	ID	Y		2.80E-03	1.40E-03	NC	9.2E-05
Tank Group 04	PB-826-13	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-13	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-13	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-826-13	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-13	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-826-13	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-826-13	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-13	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-826-13	INORG	Lead	7439-92-1	B2	Y	4.29E+00		4.29E+00	NC	NC
Tank Group 04	PB-826-14	VOC	Benzene	71-43-2	A	Y		3.10E-02	1.55E-02	2.8E-07	3.4E-03
Tank Group 04	PB-826-14	VOC	Cumene	98-82-8	D	Y	2.80E-01		2.80E-01	NC	4.6E-03
Tank Group 04	PB-826-14	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.10E-02		NC	NC
Tank Group 04	PB-826-14	VOC	1,2-Dichloroethane	107-06-2	B2	N		6.20E-02		NC	NC
Tank Group 04	PB-826-14	VOC	Ethyl Benzene	100-41-4	D	Y	7.30E-01		7.30E-01	NC	4.8E-03
Tank Group 04	PB-826-14	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.20E-01	6.00E-02	3.6E-08	1.3E-04
Tank Group 04	PB-826-14	VOC	Toluene	108-88-3	ID	Y		6.20E-02	3.10E-02	NC	4.1E-05
Tank Group 04	PB-826-14	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.20E+00		1.20E+00	NC	1.3E+00
Tank Group 04	PB-826-14	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.40E+00		4.40E+00	NC	4.8E-01
Tank Group 04	PB-826-14	VOC	Xylenes (total)	1330-20-7	ID	Y	2.14E-01		2.14E-01	NC	1.4E-02
Tank Group 04	PB-826-14	SVOC	Anthracene	120-12-7	ID	Y	6.10E-02		6.10E-02	NC	NC
Tank Group 04	PB-826-14	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.00E-02		3.00E-02	NC	NC
Tank Group 04	PB-826-14	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-826-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion		
										Risk	HQ	
Tank Group 04	PB-826-15	VOC	Toluene	108-88-3	ID	Y	2.59E-02		2.59E-02	NC	3.4E-05	
Tank Group 04	PB-826-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	7.50E+00		7.50E+00	NC	8.2E-01	
Tank Group 04	PB-826-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.40E+00		2.40E+00	NC	2.6E-01	
Tank Group 04	PB-826-15	VOC	Xylenes (total)	1330-20-7	ID	Y	1.47E+01		1.47E+01	NC	9.6E-01	
Tank Group 04	PB-826-15	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-826-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	4.80E-02		4.80E-02	NC	NC	
Tank Group 04	PB-826-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	6.15E-02		6.15E-02	NC	NC	
Tank Group 04	PB-826-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	4.20E-02		4.20E-02	NC	NC	
Tank Group 04	PB-826-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	3.40E-02		3.40E-02	NC	NC	
Tank Group 04	PB-826-15	SVOC	Chrysene	218-01-9	B2	Y	1.23E-01		1.23E-01	NC	NC	
Tank Group 04	PB-826-15	SVOC	Fluorene	86-73-7	D	Y	2.43E-01		2.43E-01	NC	NC	
Tank Group 04	PB-826-15	SVOC	Naphthalene	91-20-3	C	Y	1.38E+00		1.38E+00	9.3E-06	2.6E-01	
Tank Group 04	PB-826-15	SVOC	Phenanthrene	85-01-8	D	Y	5.70E-01		5.70E-01	NC	NC	
Tank Group 04	PB-826-15	SVOC	Pyrene	129-00-0	NC	Y	1.33E-01		1.33E-01	NC	NC	
Tank Group 04	PB-826-15	INORG	Lead	7439-92-1	B2	Y	8.19E+01		8.19E+01	NC	NC	
Tank Group 04	PB-826-16	VOC	Benzene	71-43-2	A	Y		8.90E-04	4.45E-04	8.1E-09	9.7E-05	
Tank Group 04	PB-826-16	VOC	Cumene	98-82-8	D	Y		1.80E-03	9.00E-04	NC	1.5E-05	
Tank Group 04	PB-826-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		8.90E-04		NC	NC	
Tank Group 04	PB-826-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.80E-03		NC	NC	
Tank Group 04	PB-826-16	VOC	Ethyl Benzene	100-41-4	D	Y		1.80E-03	9.00E-04	NC	5.9E-06	
Tank Group 04	PB-826-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.60E-03	1.80E-03	1.1E-09	3.9E-06	
Tank Group 04	PB-826-16	VOC	Toluene	108-88-3	ID	Y		1.80E-03	9.00E-04	NC	1.2E-06	
Tank Group 04	PB-826-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	6.10E-04		6.10E-04	NC	6.7E-05	
Tank Group 04	PB-826-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	8.90E-04		8.90E-04	NC	9.7E-05	
Tank Group 04	PB-826-16	VOC	Xylenes (total)	1330-20-7	ID	Y		3.60E-03	1.80E-03	NC	1.2E-04	
Tank Group 04	PB-826-16	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-826-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-826-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC	
Tank Group 04	PB-826-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-826-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC	
Tank Group 04	PB-826-16	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-826-16	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC	
Tank Group 04	PB-826-16	SVOC	Naphthalene	91-20-3	C	Y	2.50E-02		2.50E-02	1.7E-07	4.7E-03	
Tank Group 04	PB-826-16	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-826-16	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-826-16	INORG	Lead	7439-92-1	B2	Y	6.77E+00		6.77E+00	NC	NC	
Tank Group 04	PB-840-01	VOC	Benzene	71-43-2	A	Y	3.14E-03		3.14E-03	5.7E-08	6.9E-04	
Tank Group 04	PB-840-01	VOC	Cumene	98-82-8	D	Y	4.88E-03		4.88E-03	NC	8.0E-05	
Tank Group 04	PB-840-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.85E-04		NC	NC	
Tank Group 04	PB-840-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.35E-03		NC	NC	
Tank Group 04	PB-840-01	VOC	Ethyl Benzene	100-41-4	D	Y	6.15E-04		6.15E-04	NC	4.0E-06	
Tank Group 04	PB-840-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.75E-03	1.38E-03	8.4E-10	3.0E-06	
Tank Group 04	PB-840-01	VOC	Toluene	108-88-3	ID	Y	1.58E-03		1.58E-03	NC	2.1E-06	
Tank Group 04	PB-840-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.28E-03		1.28E-03	NC	1.4E-04	
Tank Group 04	PB-840-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.73E-03		1.73E-03	NC	1.9E-04	
Tank Group 04	PB-840-01	VOC	Xylenes (total)	1330-20-7	ID	Y	4.58E-03		4.58E-03	NC	3.0E-04	
Tank Group 04	PB-840-01	SVOC	Anthracene	120-12-7	ID	Y	7.60E-02		7.60E-02	NC	NC	
Tank Group 04	PB-840-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.95E-01		2.95E-01	NC	NC	
Tank Group 04	PB-840-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	2.75E-01		2.75E-01	NC	NC	
Tank Group 04	PB-840-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	3.50E-01		3.50E-01	NC	NC	
Tank Group 04	PB-840-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.50E-01		1.50E-01	NC	NC	
Tank Group 04	PB-840-01	SVOC	Chrysene	218-01-9	B2	Y	3.25E-01		3.25E-01	NC	NC	
Tank Group 04	PB-840-01	SVOC	Fluorene	86-73-7	D	Y	7.60E-02		7.60E-02	NC	NC	
Tank Group 04	PB-840-01	SVOC	Naphthalene	91-20-3	C	Y	4.55E-02		4.55E-02	3.1E-07	8.5E-03	
Tank Group 04	PB-840-01	SVOC	Phenanthrene	85-01-8	D	Y	2.90E-01		2.90E-01	NC	NC	
Tank Group 04	PB-840-01	SVOC	Pyrene	129-00-0	NC	Y	3.70E-01		3.70E-01	NC	NC	
Tank Group 04	PB-840-01	INORG	Lead	7439-92-1	B2	Y	2.80E+01		2.80E+01	NC	NC	
Tank Group 04	PB-840-02	VOC	Benzene	71-43-2	A	Y	2.10E-04		2.10E-04	3.8E-09	4.6E-05	
Tank Group 04	PB-840-02	VOC	Cumene	98-82-8	D	Y	3.40E-04		3.40E-04	NC	5.6E-06	
Tank Group 04	PB-840-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC	
Tank Group 04	PB-840-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC	
Tank Group 04	PB-840-02	VOC	Ethyl Benzene	100-41-4	D	Y	1.90E-04		1.90E-04	NC	1.2E-06	
Tank Group 04	PB-840-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06	
Tank Group 04	PB-840-02	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07	
Tank Group 04	PB-840-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	3.50E-03		3.50E-03	NC	3.8E-04	
Tank Group 04	PB-840-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	5.90E-03		5.90E-03	NC	6.4E-04	
Tank Group 04	PB-840-02	VOC	Xylenes (total)	1330-20-7	ID	Y	2.50E-03		2.50E-03	NC	1.6E-04	
Tank Group 04	PB-840-02	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-840-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-840-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC	
Tank Group 04	PB-840-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-840-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC	
Tank Group 04	PB-840-02	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-840-02	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC	
Tank Group 04	PB-840-02	SVOC	Naphthalene	91-20-3	C	Y	1.80E-01		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-840-02	SVOC	Phenanthrene	85-01-8	D	Y	1.10E-01		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-02	SVOC	Pyrene	129-00-0	NC	Y	1.10E-01		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-02	INORG	Lead	7439-92-1	B2	Y	4.66E+00		4.66E+00	NC	NC	
Tank Group 04	PB-840-03	VOC	Benzene	71-43-2	A	Y		4.80E-04	2.40E-04	4.4E-09	5.2E-05	
Tank Group 04	PB-840-03	VOC	Cumene	98-82-8	D	Y	1.50E-04		1.50E-04	NC	2.5E-06	
Tank Group 04	PB-840-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC	
Tank Group 04	PB-840-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.50E-04		NC	NC	
Tank Group 04	PB-840-03	VOC	Ethyl Benzene	100-41-4	D	Y	2.80E-04		2.80E-04	NC	1.8E-06	
Tank Group 04	PB-840-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06	
Tank Group 04	PB-840-03	VOC	Toluene	108-88-3	ID	Y		9.50E-04	4.75E-04	NC	6.2E-07	
Tank Group 04	PB-840-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04	
Tank Group 04	PB-840-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	6.20E-04		6.20E-04	NC	6.8E-05	
Tank Group 04	PB-840-03	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05	
Tank Group 04	PB-840-03	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-840-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-840-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC	
Tank Group 04	PB-840-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-840-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC	
Tank Group 04	PB-840-03	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC	
Tank Group 04	PB-840-03	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC	
Tank Group 04	PB-840-03	SVOC	Naphthalene	91-20-3	C	Y	1.90E-01		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-840-03	SVOC	Phenanthrene	85-01-8	D	Y	1.10E-01		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-03	SVOC	Pyrene	129-00-0	NC	Y	1.10E-01		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-03	INORG	Lead	7439-92-1	B2	Y	5.92E+00		5.92E+00	NC	NC	
Tank Group 04	PB-840-04	VOC	Benzene	71-43-2	A	Y		5.20E-04	2.60E-04	4.7E-09	5.7E-05	
Tank Group 04	PB-840-04	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06	
Tank Group 04	PB-840-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-04		NC	NC	
Tank Group 04	PB-840-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC	
Tank Group 04	PB-840-04	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06	
Tank Group 04	PB-840-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06	
Tank Group 04	PB-840-04	VOC	Toluene	108-88								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-840-04	INORG	Lead	7439-92-1	B2	Y	1.09E+01		1.09E+01	NC	NC
Tank Group 04	PB-840-05	VOC	Benzene	71-43-2	A	Y		7.20E-04	3.60E-04	6.6E-09	7.9E-05
Tank Group 04	PB-840-05	VOC	Cumene	98-82-8	D	Y		1.40E-03	7.00E-04	NC	1.1E-05
Tank Group 04	PB-840-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		7.20E-04		NC	NC
Tank Group 04	PB-840-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.40E-03		NC	NC
Tank Group 04	PB-840-05	VOC	Ethyl Benzene	100-41-4	D	Y		1.40E-03	7.00E-04	NC	4.6E-06
Tank Group 04	PB-840-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.90E-03	1.45E-03	8.8E-10	3.2E-06
Tank Group 04	PB-840-05	VOC	Toluene	108-88-3	ID	Y		1.40E-03	7.00E-04	NC	9.2E-07
Tank Group 04	PB-840-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.90E-03	1.45E-03	NC	1.6E-04
Tank Group 04	PB-840-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.70E-04		4.70E-04	NC	5.1E-05
Tank Group 04	PB-840-05	VOC	Xylenes (total)	1330-20-7	ID	Y		2.90E-03	1.45E-03	NC	9.5E-05
Tank Group 04	PB-840-05	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.00E-02		3.00E-02	NC	NC
Tank Group 04	PB-840-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-840-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	5.30E-02		5.30E-02	NC	NC
Tank Group 04	PB-840-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	2.50E-02		2.50E-02	NC	NC
Tank Group 04	PB-840-05	SVOC	Chrysene	218-01-9	B2	Y	5.60E-02		5.60E-02	NC	NC
Tank Group 04	PB-840-05	SVOC	Fluorene	86-73-7	D	Y	2.30E-02		2.30E-02	NC	NC
Tank Group 04	PB-840-05	SVOC	Naphthalene	91-20-3	C	Y	7.50E-02		7.50E-02	5.1E-07	1.4E-02
Tank Group 04	PB-840-05	SVOC	Phenanthrene	85-01-8	D	Y	7.30E-02		7.30E-02	NC	NC
Tank Group 04	PB-840-05	SVOC	Pyrene	129-00-0	NC	Y	5.60E-02		5.60E-02	NC	NC
Tank Group 04	PB-840-05	INORG	Lead	7439-92-1	B2	Y	1.03E+02		1.03E+02	NC	NC
Tank Group 04	PB-840-06	VOC	Benzene	71-43-2	A	Y		4.60E-04	2.30E-04	4.2E-09	5.0E-05
Tank Group 04	PB-840-06	VOC	Cumene	98-82-8	D	Y	1.60E-03		1.60E-03	NC	2.6E-05
Tank Group 04	PB-840-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-840-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.30E-04		NC	NC
Tank Group 04	PB-840-06	VOC	Ethyl Benzene	100-41-4	D	Y	5.80E-04		5.80E-04	NC	3.8E-06
Tank Group 04	PB-840-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-840-06	VOC	Toluene	108-88-3	ID	Y		9.30E-04	4.65E-04	NC	6.1E-07
Tank Group 04	PB-840-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-840-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-840-06	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-840-06	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-840-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-840-06	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-06	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-840-06	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-840-06	SVOC	Phenanthrene	85-01-8	D	Y	4.90E-02		4.90E-02	NC	NC
Tank Group 04	PB-840-06	SVOC	Pyrene	129-00-0	NC	Y	1.80E-02		1.80E-02	NC	NC
Tank Group 04	PB-840-06	INORG	Lead	7439-92-1	B2	Y	6.05E+00		6.05E+00	NC	NC
Tank Group 04	PB-840-07	VOC	Benzene	71-43-2	A	Y	2.30E-02		2.30E-02	4.2E-07	5.0E-03
Tank Group 04	PB-840-07	VOC	Cumene	98-82-8	D	Y	2.00E-03		2.00E-03	NC	3.3E-05
Tank Group 04	PB-840-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.60E-04		NC	NC
Tank Group 04	PB-840-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-840-07	VOC	Ethyl Benzene	100-41-4	D	Y	1.60E-02		1.60E-02	NC	1.0E-04
Tank Group 04	PB-840-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-840-07	VOC	Toluene	108-88-3	ID	Y	7.90E-04		7.90E-04	NC	1.0E-06
Tank Group 04	PB-840-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.90E-02		1.90E-02	NC	2.1E-03
Tank Group 04	PB-840-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	5.60E-03		5.60E-03	NC	6.1E-04
Tank Group 04	PB-840-07	VOC	Xylenes (total)	1330-20-7	ID	Y	4.41E-02		4.41E-02	NC	2.9E-03
Tank Group 04	PB-840-07	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-840-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-840-07	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-07	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-840-07	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-840-07	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-07	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-07	INORG	Lead	7439-92-1	B2	Y	4.94E+00		4.94E+00	NC	NC
Tank Group 04	PB-840-08	VOC	Benzene	71-43-2	A	Y	6.90E-04		6.90E-04	1.3E-08	1.5E-04
Tank Group 04	PB-840-08	VOC	Cumene	98-82-8	D	Y	1.50E-04		1.50E-04	NC	2.5E-06
Tank Group 04	PB-840-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.50E-04		NC	NC
Tank Group 04	PB-840-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-840-08	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-840-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-840-08	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-840-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-840-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-840-08	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-840-08	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-08	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-08	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-840-08	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-08	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-840-08	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-08	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-840-08	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-840-08	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-08	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-08	INORG	Lead	7439-92-1	B2	Y	5.75E+00		5.75E+00	NC	NC
Tank Group 04	PB-840-09	VOC	Benzene	71-43-2	A	Y	4.40E+00	5.20E-04	4.40E+00	8.0E-05	9.6E-01
Tank Group 04	PB-840-09	VOC	Cumene	98-82-8	D	Y	1.50E+01	1.00E-03	1.50E+01	NC	2.5E-01
Tank Group 04	PB-840-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		1.50E-01		NC	NC
Tank Group 04	PB-840-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		3.00E-01		NC	NC
Tank Group 04	PB-840-09	VOC	Ethyl Benzene	100-41-4	D	Y	6.60E+01	1.00E-03	6.60E+01	NC	4.3E-01
Tank Group 04	PB-840-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		6.10E-01	3.05E-01	1.9E-07	6.7E-04
Tank Group 04	PB-840-09	VOC	Toluene	108-88-3	ID	Y	3.00E-01		3.00E-01	NC	3.9E-04
Tank Group 04	PB-840-09	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	9.20E+01	2.10E-03	9.20E+01	NC	1.0E+01
Tank Group 04	PB-840-09	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	3.30E+01	2.10E-03	3.30E+01	NC	3.6E+00
Tank Group 04	PB-840-09	VOC	Xylenes (total)	1330-20-7	ID	Y	1.97E+02	2.10E-03	1.97E+02	NC	1.3E+01
Tank Group 04	PB-840-09	SVOC	Anthracene	120-12-7	ID	Y	1.60E-01		1.60E-01	NC	NC
Tank Group 04	PB-840-09	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	9.70E-01		9.70E-01	NC	NC
Tank Group 04	PB-840-09	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	9.60E-02		9.60E-02	NC	NC
Tank Group 04	PB-840-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.20E-01		1.20E-01	NC	NC
Tank Group 04	PB-840-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	7.20E-02		7.20E-02	NC	NC
Tank Group 04	PB-840-09	SVOC	Chrysene	218-01-9	B2	Y	2.20E-01		2.20E-01	NC	NC
Tank Group 04	PB-840-09	SVOC	Fluorene	86-73-7	D	Y	1.90E+00		1.90E+00	NC	NC
Tank Group 04	PB-840-09	SVOC	Naphthalene	91-20-3	C	Y	9.30E+00	1.90E-01	9.30E+00	6.3E-05	1.7E+00
Tank Group 04	PB-840-09	SVOC	Phenanthrene	85-01-8	D	Y	4.80E+00		4.80E+00	NC	NC
Tank Group 04	PB-840-09	SVOC	Pyrene	129-00-0	NC	Y	4.80E-01		4.80E-01	NC	NC
Tank Group 04	PB-840-09	INORG	Lead	7439-92-1	B2	Y					

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-840-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-840-10	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-10	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-840-10	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-840-10	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-10	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-10	INORG	Lead	7439-92-1	B2	Y	5.38E+00		5.38E+00	NC	NC
Tank Group 04	PB-840-11	VOC	Benzene	71-43-2	A	Y	8.40E-03		8.40E-03	1.5E-07	1.8E-03
Tank Group 04	PB-840-11	VOC	Cumene	98-82-8	D	Y	5.80E-03		5.80E-03	NC	9.5E-05
Tank Group 04	PB-840-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.90E-04		NC	NC
Tank Group 04	PB-840-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		7.80E-04		NC	NC
Tank Group 04	PB-840-11	VOC	Ethyl Benzene	100-41-4	D	Y	9.70E-03		9.70E-03	NC	6.4E-05
Tank Group 04	PB-840-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.60E-03	8.00E-04	4.9E-10	1.7E-06
Tank Group 04	PB-840-11	VOC	Toluene	108-88-3	ID	Y		7.80E-04	3.90E-04	NC	5.1E-07
Tank Group 04	PB-840-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	7.20E-02		7.20E-02	NC	7.9E-03
Tank Group 04	PB-840-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.00E-02		4.00E-02	NC	4.4E-03
Tank Group 04	PB-840-11	VOC	Xylenes (total)	1330-20-7	ID	Y	5.89E-02		5.89E-02	NC	3.9E-03
Tank Group 04	PB-840-11	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-840-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-840-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-840-11	SVOC	Chrysene	218-01-9	B2	Y	4.10E-02		4.10E-02	NC	NC
Tank Group 04	PB-840-11	SVOC	Fluorene	86-73-7	D	Y	7.20E-02		7.20E-02	NC	NC
Tank Group 04	PB-840-11	SVOC	Naphthalene	91-20-3	C	Y	9.00E-02		9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-840-11	SVOC	Phenanthrene	85-01-8	D	Y	1.80E-01		1.80E-01	NC	NC
Tank Group 04	PB-840-11	SVOC	Pyrene	129-00-0	NC	Y	3.10E-02		3.10E-02	NC	NC
Tank Group 04	PB-840-11	INORG	Lead	7439-92-1	B2	Y	7.06E+00		7.06E+00	NC	NC
Tank Group 04	PB-840-12	VOC	Benzene	71-43-2	A	Y		5.30E-04	2.65E-04	4.8E-09	5.8E-05
Tank Group 04	PB-840-12	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-840-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.30E-04		NC	NC
Tank Group 04	PB-840-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-840-12	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-840-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-840-12	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-840-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-840-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-840-12	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-840-12	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-840-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-840-12	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-12	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-840-12	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-840-12	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-12	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-12	INORG	Lead	7439-92-1	B2	Y	5.21E+00		5.21E+00	NC	NC
Tank Group 04	PB-840-13	VOC	Benzene	71-43-2	A	Y		5.90E-04	2.95E-04	5.4E-09	6.4E-05
Tank Group 04	PB-840-13	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-840-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.90E-04		NC	NC
Tank Group 04	PB-840-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-840-13	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-840-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-840-13	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-840-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-840-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-840-13	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-840-13	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-13	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-13	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-840-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-840-13	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-13	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-840-13	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-840-13	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-13	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-13	INORG	Lead	7439-92-1	B2	Y	6.78E+00		6.78E+00	NC	NC
Tank Group 04	PB-840-14	VOC	Benzene	71-43-2	A	Y		5.40E-04	2.70E-04	4.9E-09	5.9E-05
Tank Group 04	PB-840-14	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-840-14	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-840-14	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-840-14	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-840-14	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-840-14	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-840-14	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-840-14	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-840-14	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-840-14	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-14	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.80E-01		1.80E-01	NC	NC
Tank Group 04	PB-840-14	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.80E-01		1.80E-01	NC	NC
Tank Group 04	PB-840-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	2.20E-01		2.20E-01	NC	NC
Tank Group 04	PB-840-14	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	9.90E-02		9.90E-02	NC	NC
Tank Group 04	PB-840-14	SVOC	Chrysene	218-01-9	B2	Y	1.70E-01		1.70E-01	NC	NC
Tank Group 04	PB-840-14	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-840-14	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-840-14	SVOC	Phenanthrene	85-01-8	D	Y	1.70E-01		1.70E-01	NC	NC
Tank Group 04	PB-840-14	SVOC	Pyrene	129-00-0	NC	Y	2.80E-01		2.80E-01	NC	NC
Tank Group 04	PB-840-14	INORG	Lead	7439-92-1	B2	Y	4.44E+01		4.44E+01	NC	NC
Tank Group 04	PB-840-15	VOC	Benzene	71-43-2	A	Y		5.50E-04	2.75E-04	5.0E-09	6.0E-05
Tank Group 04	PB-840-15	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-840-15	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.50E-04		NC	NC
Tank Group 04	PB-840-15	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-840-15	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-840-15	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-840-15	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-840-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-840-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-840-15	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-840-15	SVOC	Anthracene	120-12-7	ID	Y	1.10E-01		1.10E-01	NC	NC
Tank Group 04	PB-840-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	4.80E-01		4.80E-01	NC	NC
Tank Group 04	PB-840-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	4.60E-01		4.60E-01	NC	NC
Tank Group 04	PB-840-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	5.70E-01		5.70E-01	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-840-16	VOC	Toluene	108-88-3	ID	Y		8.90E-04	4.45E-04	NC	5.8E-07
Tank Group 04	PB-840-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-840-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-840-16	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-840-16	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-840-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.20E-01		1.20E-01	NC	NC
Tank Group 04	PB-840-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.40E-01		1.40E-01	NC	NC
Tank Group 04	PB-840-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.80E-01		1.80E-01	NC	NC
Tank Group 04	PB-840-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	9.80E-02		9.80E-02	NC	NC
Tank Group 04	PB-840-16	SVOC	Chrysene	218-01-9	B2	Y	1.30E-01		1.30E-01	NC	NC
Tank Group 04	PB-840-16	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-840-16	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-840-16	SVOC	Phenanthrene	85-01-8	D	Y	1.40E-01		1.40E-01	NC	NC
Tank Group 04	PB-840-16	SVOC	Pyrene	129-00-0	NC	Y	1.80E-01		1.80E-01	NC	NC
Tank Group 04	PB-840-16	INORG	Lead	7439-92-1	B2	Y	5.31E+01		5.31E+01	NC	NC
Tank Group 04	PB-841-01	VOC	Benzene	71-43-2	A	Y		6.40E-04	3.20E-04	5.8E-09	7.0E-05
Tank Group 04	PB-841-01	VOC	Cumene	98-82-8	D	Y		1.30E-03	6.50E-04	NC	1.1E-05
Tank Group 04	PB-841-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.40E-04		NC	NC
Tank Group 04	PB-841-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-841-01	VOC	Ethyl Benzene	100-41-4	D	Y		1.30E-03	6.50E-04	NC	4.3E-06
Tank Group 04	PB-841-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.50E-03	1.25E-03	7.6E-10	2.7E-06
Tank Group 04	PB-841-01	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank Group 04	PB-841-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.50E-03	1.25E-03	NC	1.4E-04
Tank Group 04	PB-841-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.50E-03	1.25E-03	NC	1.4E-04
Tank Group 04	PB-841-01	VOC	Xylenes (total)	1330-20-7	ID	Y		2.50E-03	1.25E-03	NC	8.2E-05
Tank Group 04	PB-841-01	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-841-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-841-01	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-01	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-841-01	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-841-01	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-01	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-01	INORG	Lead	7439-92-1	B2	Y	3.27E+00		3.27E+00	NC	NC
Tank Group 04	PB-841-02	VOC	Benzene	71-43-2	A	Y		6.00E-04	3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-841-02	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-841-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.00E-04		NC	NC
Tank Group 04	PB-841-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-841-02	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-841-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-841-02	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-841-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-841-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-841-02	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-841-02	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-841-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-841-02	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-02	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-841-02	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-841-02	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-02	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-02	INORG	Lead	7439-92-1	B2	Y	3.32E+00		3.32E+00	NC	NC
Tank Group 04	PB-841-03	VOC	Benzene	71-43-2	A	Y		5.40E-04	2.70E-04	4.9E-09	5.9E-05
Tank Group 04	PB-841-03	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-841-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-841-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-841-03	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-841-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-841-03	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-841-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-841-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-841-03	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-841-03	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.30E-01	6.50E-02	NC	NC
Tank Group 04	PB-841-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.30E-01	6.50E-02	NC	NC
Tank Group 04	PB-841-03	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-03	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-841-03	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-841-03	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-03	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-03	INORG	Lead	7439-92-1	B2	Y	3.07E+00		3.07E+00	NC	NC
Tank Group 04	PB-841-04	VOC	Benzene	71-43-2	A	Y		3.90E-04	1.95E-04	3.6E-09	4.3E-05
Tank Group 04	PB-841-04	VOC	Cumene	98-82-8	D	Y		7.80E-04	3.90E-04	NC	6.4E-06
Tank Group 04	PB-841-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.90E-04		NC	NC
Tank Group 04	PB-841-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		7.80E-04		NC	NC
Tank Group 04	PB-841-04	VOC	Ethyl Benzene	100-41-4	D	Y		7.80E-04	3.90E-04	NC	2.6E-06
Tank Group 04	PB-841-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.60E-03	8.00E-04	4.9E-10	1.7E-06
Tank Group 04	PB-841-04	VOC	Toluene	108-88-3	ID	Y		7.80E-04	3.90E-04	NC	5.1E-07
Tank Group 04	PB-841-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.60E-03	8.00E-04	NC	8.7E-05
Tank Group 04	PB-841-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.60E-03	8.00E-04	NC	8.7E-05
Tank Group 04	PB-841-04	VOC	Xylenes (total)	1330-20-7	ID	Y		1.60E-03	8.00E-04	NC	5.2E-05
Tank Group 04	PB-841-04	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-841-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-841-04	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-04	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-841-04	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-841-04	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-04	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-04	INORG	Lead	7439-92-1	B2	Y	5.88E+00		5.88E+00	NC	NC
Tank Group 04	PB-841-05	VOC	Benzene	71-43-2	A	Y		6.00E-04	3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-841-05	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-841-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.00E-04		NC	NC
Tank Group 04	PB-841-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-841-05	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-841-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-841-05	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-841-05	INORG	Lead	7439-92-1	B2	Y	3.54E+00		3.54E+00	NC	NC
Tank Group 04	PB-841-06	VOC	Benzene	71-43-2	A	Y		5.90E-04	2.95E-04	5.4E-09	6.4E-05
Tank Group 04	PB-841-06	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-841-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.90E-04		NC	NC
Tank Group 04	PB-841-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-841-06	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-841-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-841-06	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-841-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-841-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-841-06	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-841-06	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-841-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-841-06	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-06	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-841-06	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-841-06	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-06	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-06	INORG	Lead	7439-92-1	B2	Y	4.07E+00		4.07E+00	NC	NC
Tank Group 04	PB-841-07	VOC	Benzene	71-43-2	A	Y		8.70E-04	4.35E-04	7.9E-09	9.5E-05
Tank Group 04	PB-841-07	VOC	Cumene	98-82-8	D	Y		1.70E-03	8.50E-04	NC	1.4E-05
Tank Group 04	PB-841-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		8.70E-04		NC	NC
Tank Group 04	PB-841-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.70E-03		NC	NC
Tank Group 04	PB-841-07	VOC	Ethyl Benzene	100-41-4	D	Y		1.70E-03	8.50E-04	NC	5.6E-06
Tank Group 04	PB-841-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.50E-03	1.75E-03	1.1E-09	3.8E-06
Tank Group 04	PB-841-07	VOC	Toluene	108-88-3	ID	Y		1.70E-03	8.50E-04	NC	1.1E-06
Tank Group 04	PB-841-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.50E-03	1.75E-03	NC	1.9E-04
Tank Group 04	PB-841-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.50E-03	1.75E-03	NC	1.9E-04
Tank Group 04	PB-841-07	VOC	Xylenes (total)	1330-20-7	ID	Y		3.50E-03	1.75E-03	NC	1.1E-04
Tank Group 04	PB-841-07	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-841-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-841-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-841-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	3.70E-02		3.70E-02	NC	NC
Tank Group 04	PB-841-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-841-07	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-841-07	SVOC	Fluorene	86-73-7	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-841-07	SVOC	Naphthalene	91-20-3	C	Y		2.10E-01	1.05E-01	7.1E-07	2.0E-02
Tank Group 04	PB-841-07	SVOC	Phenanthrene	85-01-8	D	Y	3.20E-02		3.20E-02	NC	NC
Tank Group 04	PB-841-07	SVOC	Pyrene	129-00-0	NC	Y	3.80E-02		3.80E-02	NC	NC
Tank Group 04	PB-841-07	INORG	Lead	7439-92-1	B2	Y	8.11E+00		8.11E+00	NC	NC
Tank Group 04	PB-841-08	VOC	Benzene	71-43-2	A	Y		6.50E-04	3.25E-04	5.9E-09	7.1E-05
Tank Group 04	PB-841-08	VOC	Cumene	98-82-8	D	Y		1.30E-03	6.50E-04	NC	1.1E-05
Tank Group 04	PB-841-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.50E-04		NC	NC
Tank Group 04	PB-841-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-841-08	VOC	Ethyl Benzene	100-41-4	D	Y		1.30E-03	6.50E-04	NC	4.3E-06
Tank Group 04	PB-841-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.60E-03	1.30E-03	7.9E-10	2.8E-06
Tank Group 04	PB-841-08	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank Group 04	PB-841-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.60E-03	1.30E-03	NC	1.4E-04
Tank Group 04	PB-841-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.60E-03	1.30E-03	NC	1.4E-04
Tank Group 04	PB-841-08	VOC	Xylenes (total)	1330-20-7	ID	Y		2.60E-03	1.30E-03	NC	8.5E-05
Tank Group 04	PB-841-08	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-08	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-08	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-841-08	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-08	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-841-08	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-08	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-841-08	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-841-08	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-08	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-08	INORG	Lead	7439-92-1	B2	Y	5.00E+00		5.00E+00	NC	NC
Tank Group 04	PB-841-09	VOC	Benzene	71-43-2	A	Y		9.95E-04	4.98E-04	9.1E-09	1.1E-04
Tank Group 04	PB-841-09	VOC	Cumene	98-82-8	D	Y		1.95E-03	9.75E-04	NC	1.6E-05
Tank Group 04	PB-841-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		9.95E-04		NC	NC
Tank Group 04	PB-841-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.95E-03		NC	NC
Tank Group 04	PB-841-09	VOC	Ethyl Benzene	100-41-4	D	Y		1.95E-03	9.75E-04	NC	6.4E-06
Tank Group 04	PB-841-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.95E-03	1.98E-03	1.2E-09	4.3E-06
Tank Group 04	PB-841-09	VOC	Toluene	108-88-3	ID	Y		1.95E-03	9.75E-04	NC	1.3E-06
Tank Group 04	PB-841-09	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.95E-03	1.98E-03	NC	2.2E-04
Tank Group 04	PB-841-09	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.95E-03	1.98E-03	NC	2.2E-04
Tank Group 04	PB-841-09	VOC	Xylenes (total)	1330-20-7	ID	Y		3.95E-03	1.98E-03	NC	1.3E-04
Tank Group 04	PB-841-09	SVOC	Anthracene	120-12-7	ID	Y	5.60E-02		5.60E-02	NC	NC
Tank Group 04	PB-841-09	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.35E-01		1.35E-01	NC	NC
Tank Group 04	PB-841-09	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.48E-01		1.48E-01	NC	NC
Tank Group 04	PB-841-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.65E-01		1.65E-01	NC	NC
Tank Group 04	PB-841-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	8.75E-02		8.75E-02	NC	NC
Tank Group 04	PB-841-09	SVOC	Chrysene	218-01-9	B2	Y	1.35E-01		1.35E-01	NC	NC
Tank Group 04	PB-841-09	SVOC	Fluorene	86-73-7	D	Y	5.55E-02		5.55E-02	NC	NC
Tank Group 04	PB-841-09	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-841-09	SVOC	Phenanthrene	85-01-8	D	Y	1.25E-01		1.25E-01	NC	NC
Tank Group 04	PB-841-09	SVOC	Pyrene	129-00-0	NC	Y	2.00E-01		2.00E-01	NC	NC
Tank Group 04	PB-841-09	INORG	Lead	7439-92-1	B2	Y	4.30E+00		4.30E+00	NC	NC
Tank Group 04	PB-841-10	VOC	Benzene	71-43-2	A	Y		6.10E-04	3.05E-04	5.6E-09	6.7E-05
Tank Group 04	PB-841-10	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-841-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.10E-04		NC	NC
Tank Group 04	PB-841-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-841-10	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-841-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-841-10	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-841-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-841-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-841-10	VOC	Xylenes (total)								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-841-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-841-11	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-11	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-841-11	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-841-11	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-11	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-841-11	INORG	Lead	7439-92-1	B2	Y	2.51E+00		2.51E+00	NC	NC
Tank Group 04	PB-841-12	VOC	Benzene	71-43-2	A	Y	2.00E-04		2.00E-04	3.6E-09	4.4E-05
Tank Group 04	PB-841-12	VOC	Cumene	98-82-8	D	Y		9.20E-04	4.60E-04	NC	7.5E-06
Tank Group 04	PB-841-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-841-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.20E-04		NC	NC
Tank Group 04	PB-841-12	VOC	Ethyl Benzene	100-41-4	D	Y		9.20E-04	4.60E-04	NC	3.0E-06
Tank Group 04	PB-841-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-841-12	VOC	Toluene	108-88-3	ID	Y		9.20E-04	4.60E-04	NC	6.0E-07
Tank Group 04	PB-841-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-841-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-841-12	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-841-12	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-841-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-841-12	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-12	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-841-12	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-841-12	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-12	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-12	INORG	Lead	7439-92-1	B2	Y	3.72E+00		3.72E+00	NC	NC
Tank Group 04	PB-841-13	VOC	Benzene	71-43-2	A	Y		8.60E-04	4.30E-04	7.8E-09	9.4E-05
Tank Group 04	PB-841-13	VOC	Cumene	98-82-8	D	Y		1.70E-03	8.50E-04	NC	1.4E-05
Tank Group 04	PB-841-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		8.60E-04		NC	NC
Tank Group 04	PB-841-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.70E-03		NC	NC
Tank Group 04	PB-841-13	VOC	Ethyl Benzene	100-41-4	D	Y		1.70E-03	8.50E-04	NC	5.6E-06
Tank Group 04	PB-841-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.50E-03	1.75E-03	1.1E-09	3.8E-06
Tank Group 04	PB-841-13	VOC	Toluene	108-88-3	ID	Y		1.70E-03	8.50E-04	NC	1.1E-06
Tank Group 04	PB-841-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.50E-03	1.75E-03	NC	1.9E-04
Tank Group 04	PB-841-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.50E-03	1.75E-03	NC	1.9E-04
Tank Group 04	PB-841-13	VOC	Xylenes (total)	1330-20-7	ID	Y		3.50E-03	1.75E-03	NC	1.1E-04
Tank Group 04	PB-841-13	SVOC	Anthracene	120-12-7	ID	Y	8.80E-02		8.80E-02	NC	NC
Tank Group 04	PB-841-13	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.40E-01		2.40E-01	NC	NC
Tank Group 04	PB-841-13	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	2.20E-01		2.20E-01	NC	NC
Tank Group 04	PB-841-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	2.60E-01		2.60E-01	NC	NC
Tank Group 04	PB-841-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.40E-01		1.40E-01	NC	NC
Tank Group 04	PB-841-13	SVOC	Chrysene	218-01-9	B2	Y	2.10E-01		2.10E-01	NC	NC
Tank Group 04	PB-841-13	SVOC	Fluorene	86-73-7	D	Y	3.60E-02		3.60E-02	NC	NC
Tank Group 04	PB-841-13	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-841-13	SVOC	Phenanthrene	85-01-8	D	Y	3.90E-01		3.90E-01	NC	NC
Tank Group 04	PB-841-13	SVOC	Pyrene	129-00-0	NC	Y	4.10E-01		4.10E-01	NC	NC
Tank Group 04	PB-841-13	INORG	Lead	7439-92-1	B2	Y	9.39E+01		9.39E+01	NC	NC
Tank Group 04	PB-841-14	VOC	Benzene	71-43-2	A	Y	3.20E-04		3.20E-04	5.8E-09	7.0E-05
Tank Group 04	PB-841-14	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-841-14	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.80E-04		NC	NC
Tank Group 04	PB-841-14	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-841-14	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-841-14	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-841-14	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-841-14	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-841-14	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-841-14	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-841-14	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-841-14	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.50E-02		3.50E-02	NC	NC
Tank Group 04	PB-841-14	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	4.40E-02		4.40E-02	NC	NC
Tank Group 04	PB-841-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	6.10E-02		6.10E-02	NC	NC
Tank Group 04	PB-841-14	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	3.90E-02		3.90E-02	NC	NC
Tank Group 04	PB-841-14	SVOC	Chrysene	218-01-9	B2	Y	4.40E-02		4.40E-02	NC	NC
Tank Group 04	PB-841-14	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-841-14	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-841-14	SVOC	Phenanthrene	85-01-8	D	Y	3.20E-02		3.20E-02	NC	NC
Tank Group 04	PB-841-14	SVOC	Pyrene	129-00-0	NC	Y	5.40E-02		5.40E-02	NC	NC
Tank Group 04	PB-841-14	INORG	Lead	7439-92-1	B2	Y	3.89E+01		3.89E+01	NC	NC
Tank Group 04	PB-843-01	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-843-01	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-843-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-843-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-843-01	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-843-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-843-01	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-843-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-843-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-843-01	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-843-01	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-843-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-843-01	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-01	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-843-01	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-843-01	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-01	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-01	INORG	Lead	7439-92-1	B2	Y	3.02E+00		3.02E+00	NC	NC
Tank Group 04	PB-843-02	VOC	Benzene	71-43-2	A	Y	8.50E-04		8.50E-04	1.6E-08	1.9E-04
Tank Group 04	PB-843-02	VOC	Cumene	98-82-8	D	Y		9.10E-04	4.55E-04	NC	7.4E-06
Tank Group 04	PB-843-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-843-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.10E-04		NC	NC
Tank Group 04	PB-843-02	VOC	Ethyl Benzene	100-41-4	D	Y		9.10E-04	4.55E-04	NC	3.0E-06
Tank Group 04	PB-843-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-843-02	VOC	Toluene	108-88-3	ID	Y		9.10E-04	4.55E-04	NC	6.0E-07
Tank Group 04	PB-843-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-843-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-843-02	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-843-02	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-843-03	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank Group 04	PB-843-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.70E-03	1.35E-03	NC	1.5E-04
Tank Group 04	PB-843-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.70E-03	1.35E-03	NC	1.5E-04
Tank Group 04	PB-843-03	VOC	Xylenes (total)	1330-20-7	ID	Y		2.70E-03	1.35E-03	NC	8.8E-05
Tank Group 04	PB-843-03	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-843-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-843-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-843-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-843-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-843-03	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-843-03	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-843-03	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-843-03	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-843-03	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-843-03	INORG	Lead	7439-92-1	B2	Y	3.06E+00		3.06E+00	NC	NC
Tank Group 04	PB-843-04	VOC	Benzene	71-43-2	A	Y	7.80E-04		7.80E-04	1.4E-08	1.7E-04
Tank Group 04	PB-843-04	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-843-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.10E-04		NC	NC
Tank Group 04	PB-843-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-843-04	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-843-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-843-04	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-843-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-843-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-843-04	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-843-04	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-04	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-04	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-843-04	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-843-04	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-04	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-04	INORG	Lead	7439-92-1	B2	Y	5.63E+00		5.63E+00	NC	NC
Tank Group 04	PB-843-05	VOC	Benzene	71-43-2	A	Y	6.70E-03		6.70E-03	1.2E-07	1.5E-03
Tank Group 04	PB-843-05	VOC	Cumene	98-82-8	D	Y	1.20E-04		1.20E-04	NC	2.0E-06
Tank Group 04	PB-843-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-843-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-843-05	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-843-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-843-05	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-843-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-843-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-843-05	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-843-05	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-843-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-843-05	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-05	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-843-05	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-843-05	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-05	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-05	INORG	Lead	7439-92-1	B2	Y	6.17E+00		6.17E+00	NC	NC
Tank Group 04	PB-843-06	VOC	Benzene	71-43-2	A	Y	5.70E-03		5.70E-03	1.0E-07	1.2E-03
Tank Group 04	PB-843-06	VOC	Cumene	98-82-8	D	Y	7.10E-04		7.10E-04	NC	1.2E-05
Tank Group 04	PB-843-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.10E-04		NC	NC
Tank Group 04	PB-843-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-843-06	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-843-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	3.70E-04		3.70E-04	2.3E-10	8.1E-07
Tank Group 04	PB-843-06	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-843-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-843-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-843-06	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-843-06	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-06	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-06	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-843-06	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-843-06	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-06	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-06	INORG	Lead	7439-92-1	B2	Y	6.13E+00		6.13E+00	NC	NC
Tank Group 04	PB-843-07	VOC	Benzene	71-43-2	A	Y	3.20E-04		3.20E-04	5.8E-09	7.0E-05
Tank Group 04	PB-843-07	VOC	Cumene	98-82-8	D	Y	1.60E-04		1.60E-04	NC	2.6E-06
Tank Group 04	PB-843-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC
Tank Group 04	PB-843-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.60E-04		NC	NC
Tank Group 04	PB-843-07	VOC	Ethyl Benzene	100-41-4	D	Y	7.10E-04		7.10E-04	NC	4.6E-06
Tank Group 04	PB-843-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	4.70E-04		4.70E-04	2.9E-10	1.0E-06
Tank Group 04	PB-843-07	VOC	Toluene	108-88-3	ID	Y	2.00E-03		2.00E-03	NC	2.6E-06
Tank Group 04	PB-843-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.80E-03		1.80E-03	NC	2.0E-04
Tank Group 04	PB-843-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.10E-03		1.10E-03	NC	1.2E-04
Tank Group 04	PB-843-07	VOC	Xylenes (total)	1330-20-7	ID	Y	4.90E-03		4.90E-03	NC	3.2E-04
Tank Group 04	PB-843-07	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.70E-02		3.70E-02	NC	NC
Tank Group 04	PB-843-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	3.30E-02		3.30E-02	NC	NC
Tank Group 04	PB-843-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-07	SVOC	Chrysene	218-01-9	B2	Y	1.00E-01		1.00E-01	NC	NC
Tank Group 04	PB-843-07	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-843-07	SVOC	Naphthalene	91-20-3	C	Y	3.80E-02		3.80E-02	2.6E-07	7.1E-03
Tank Group 04	PB-843-07	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-07	SVOC	Pyrene	129-00-0	NC	Y	1.40E-01		1.40E-01	NC	NC
Tank Group 04	PB-843-07	INORG	Lead	7439-92-1	B2	Y	1.42E+01		1.42E+01	NC	NC
Tank Group 04	PB-843-08	VOC	Benzene	71-43-2	A	Y		5.50E-04	2.75E-04	5.0E-09	6.0E-05
Tank Group 04	PB-843-08	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-843-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.50E-04		NC	NC
Tank Group 04	PB-843-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-843-08	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-843-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-843-08	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-843-08	INORG	Lead	7439-92-1	B2	Y	3.99E+00		3.99E+00	NC	NC
Tank Group 04	PB-843-09	VOC	Benzene	71-43-2	A	Y	1.80E-03		1.80E-03	3.3E-08	3.9E-04
Tank Group 04	PB-843-09	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-843-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.30E-04		NC	NC
Tank Group 04	PB-843-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-843-09	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-843-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.50E-03	1.25E-03	7.6E-10	2.7E-06
Tank Group 04	PB-843-09	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-843-09	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.50E-03	1.25E-03	NC	1.4E-04
Tank Group 04	PB-843-09	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.50E-03	1.25E-03	NC	1.4E-04
Tank Group 04	PB-843-09	VOC	Xylenes (total)	1330-20-7	ID	Y		2.50E-03	1.25E-03	NC	8.2E-05
Tank Group 04	PB-843-09	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-09	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-09	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-843-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-843-09	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-09	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-843-09	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-843-09	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-09	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-09	INORG	Lead	7439-92-1	B2	Y	1.83E+01		1.83E+01	NC	NC
Tank Group 04	PB-843-10	VOC	Benzene	71-43-2	A	Y	8.20E-02		8.20E-02	1.5E-06	1.8E-02
Tank Group 04	PB-843-10	VOC	Cumene	98-82-8	D	Y	3.70E-04		3.70E-04	NC	6.1E-06
Tank Group 04	PB-843-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-04		NC	NC
Tank Group 04	PB-843-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-843-10	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-843-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.20E-03		1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-843-10	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-843-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-843-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-843-10	VOC	Xylenes (total)	1330-20-7	ID	Y	7.00E-03		7.00E-03	NC	4.6E-04
Tank Group 04	PB-843-10	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-10	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-10	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-843-10	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-843-10	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-10	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-843-10	INORG	Lead	7439-92-1	B2	Y	5.30E+00		5.30E+00	NC	NC
Tank Group 04	PB-843-11	VOC	Benzene	71-43-2	A	Y	2.85E-04		2.85E-04	5.2E-09	6.2E-05
Tank Group 04	PB-843-11	VOC	Cumene	98-82-8	D	Y	4.55E-04		4.55E-04	NC	7.4E-06
Tank Group 04	PB-843-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.45E-04		NC	NC
Tank Group 04	PB-843-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-843-11	VOC	Ethyl Benzene	100-41-4	D	Y		1.30E-03	6.50E-04	NC	4.3E-06
Tank Group 04	PB-843-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	8.75E-04		8.75E-04	5.3E-10	1.9E-06
Tank Group 04	PB-843-11	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank Group 04	PB-843-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.55E-03	1.28E-03	NC	1.4E-04
Tank Group 04	PB-843-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.55E-03	1.28E-03	NC	1.4E-04
Tank Group 04	PB-843-11	VOC	Xylenes (total)	1330-20-7	ID	Y		2.55E-03	1.28E-03	NC	8.3E-05
Tank Group 04	PB-843-11	SVOC	Anthracene	120-12-7	ID	Y		1.15E-01	5.75E-02	NC	NC
Tank Group 04	PB-843-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.85E-02		3.85E-02	NC	NC
Tank Group 04	PB-843-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.55E-01	7.75E-02	NC	NC
Tank Group 04	PB-843-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.15E-01	5.75E-02	NC	NC
Tank Group 04	PB-843-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.55E-01	7.75E-02	NC	NC
Tank Group 04	PB-843-11	SVOC	Chrysene	218-01-9	B2	Y		1.15E-01	5.75E-02	NC	NC
Tank Group 04	PB-843-11	SVOC	Fluorene	86-73-7	D	Y		1.95E-01	9.75E-02	NC	NC
Tank Group 04	PB-843-11	SVOC	Naphthalene	91-20-3	C	Y		1.95E-01	9.75E-02	6.6E-07	1.8E-02
Tank Group 04	PB-843-11	SVOC	Phenanthrene	85-01-8	D	Y	4.05E-02		4.05E-02	NC	NC
Tank Group 04	PB-843-11	SVOC	Pyrene	129-00-0	NC	Y	4.05E-02		4.05E-02	NC	NC
Tank Group 04	PB-843-11	INORG	Lead	7439-92-1	B2	Y	1.19E+01		1.19E+01	NC	NC
Tank Group 04	PB-843-12	VOC	Benzene	71-43-2	A	Y	1.70E-03		1.70E-03	3.1E-08	3.7E-04
Tank Group 04	PB-843-12	VOC	Cumene	98-82-8	D	Y	4.50E-04		4.50E-04	NC	7.4E-06
Tank Group 04	PB-843-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-843-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-843-12	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-843-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	9.00E-04		9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-843-12	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-843-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-843-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-843-12	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-843-12	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-843-12	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-12	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-843-12	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-843-12	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-12	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-843-12	INORG	Lead	7439-92-1	B2	Y	8.48E+00		8.48E+00	NC	NC
Tank Group 04	PB-843-13	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-843-13	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-843-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-843-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-843-13	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-843-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-843-13	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-843-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-843-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-843-13	VOC	Xylenes (total)								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion		
										Risk	HQ	
Tank Group 04	PB-843-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC	
Tank Group 04	PB-843-14	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC	
Tank Group 04	PB-843-14	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC	
Tank Group 04	PB-843-14	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC	
Tank Group 04	PB-843-14	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02	
Tank Group 04	PB-843-14	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC	
Tank Group 04	PB-843-14	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC	
Tank Group 04	PB-843-14	INORG	Lead	7439-92-1	B2	Y	1.12E+01		1.12E+01	NC	NC	
Tank Group 04	PB-843-15	VOC	Benzene	71-43-2	A	Y		4.80E-04	2.40E-04	4.4E-09	5.2E-05	
Tank Group 04	PB-843-15	VOC	Cumene	98-82-8	D	Y		9.70E-04	4.85E-04	NC	7.9E-06	
Tank Group 04	PB-843-15	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC	
Tank Group 04	PB-843-15	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.70E-04		NC	NC	
Tank Group 04	PB-843-15	VOC	Ethyl Benzene	100-41-4	D	Y		9.70E-04	4.85E-04	NC	3.2E-06	
Tank Group 04	PB-843-15	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06	
Tank Group 04	PB-843-15	VOC	Toluene	108-88-3	ID	Y		9.70E-04	4.85E-04	NC	6.4E-07	
Tank Group 04	PB-843-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04	
Tank Group 04	PB-843-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04	
Tank Group 04	PB-843-15	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05	
Tank Group 04	PB-843-15	SVOC	Anthracene	120-12-7	ID	Y	5.00E-02		5.00E-02	NC	NC	
Tank Group 04	PB-843-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.40E-01		2.40E-01	NC	NC	
Tank Group 04	PB-843-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	2.30E-01		2.30E-01	NC	NC	
Tank Group 04	PB-843-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	2.70E-01		2.70E-01	NC	NC	
Tank Group 04	PB-843-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.20E-01		1.20E-01	NC	NC	
Tank Group 04	PB-843-15	SVOC	Chrysene	218-01-9	B2	Y	2.40E-01		2.40E-01	NC	NC	
Tank Group 04	PB-843-15	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC	
Tank Group 04	PB-843-15	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02	
Tank Group 04	PB-843-15	SVOC	Phenanthrene	85-01-8	D	Y	1.90E-01		1.90E-01	NC	NC	
Tank Group 04	PB-843-15	SVOC	Pyrene	129-00-0	NC	Y	3.90E-01		3.90E-01	NC	NC	
Tank Group 04	PB-843-15	INORG	Lead	7439-92-1	B2	Y	9.20E+01		9.20E+01	NC	NC	
Tank Group 04	PB-843-16	VOC	Benzene	71-43-2	A	Y		4.80E-04	2.40E-04	4.4E-09	5.2E-05	
Tank Group 04	PB-843-16	VOC	Cumene	98-82-8	D	Y		9.70E-04	4.85E-04	NC	7.9E-06	
Tank Group 04	PB-843-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC	
Tank Group 04	PB-843-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.70E-04		NC	NC	
Tank Group 04	PB-843-16	VOC	Ethyl Benzene	100-41-4	D	Y		9.70E-04	4.85E-04	NC	3.2E-06	
Tank Group 04	PB-843-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06	
Tank Group 04	PB-843-16	VOC	Toluene	108-88-3	ID	Y		9.70E-04	4.85E-04	NC	6.4E-07	
Tank Group 04	PB-843-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04	
Tank Group 04	PB-843-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04	
Tank Group 04	PB-843-16	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05	
Tank Group 04	PB-843-16	SVOC	Anthracene	120-12-7	ID	Y	1.20E-01		1.20E-01	NC	NC	
Tank Group 04	PB-843-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.20E-01		1.20E-01	NC	NC	
Tank Group 04	PB-843-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.60E-01		1.60E-01	NC	NC	
Tank Group 04	PB-843-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.20E-01		1.20E-01	NC	NC	
Tank Group 04	PB-843-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.60E-01		1.60E-01	NC	NC	
Tank Group 04	PB-843-16	SVOC	Chrysene	218-01-9	B2	Y	1.20E-01		1.20E-01	NC	NC	
Tank Group 04	PB-843-16	SVOC	Fluorene	86-73-7	D	Y	1.90E-01		1.90E-01	9.50E-02	NC	
Tank Group 04	PB-843-16	SVOC	Naphthalene	91-20-3	C	Y	1.90E-01		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-843-16	SVOC	Phenanthrene	85-01-8	D	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-843-16	SVOC	Pyrene	129-00-0	NC	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-843-16	INORG	Lead	7439-92-1	B2	Y	4.86E+01		4.86E+01	NC	NC	
Tank Group 04	PB-843-17	VOC	Benzene	71-43-2	A	Y	2.40E-04		2.40E-04	4.4E-09	5.2E-05	
Tank Group 04	PB-843-17	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06	
Tank Group 04	PB-843-17	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.70E-04		NC	NC	
Tank Group 04	PB-843-17	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC	
Tank Group 04	PB-843-17	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06	
Tank Group 04	PB-843-17	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	5.50E-04		5.50E-04	3.3E-10	1.2E-06	
Tank Group 04	PB-843-17	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07	
Tank Group 04	PB-843-17	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04	
Tank Group 04	PB-843-17	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04	
Tank Group 04	PB-843-17	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05	
Tank Group 04	PB-843-17	SVOC	Anthracene	120-12-7	ID	Y	1.20E-01		1.20E-01	NC	NC	
Tank Group 04	PB-843-17	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.20E-01		1.20E-01	NC	NC	
Tank Group 04	PB-843-17	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.60E-01		1.60E-01	8.00E-02	NC	
Tank Group 04	PB-843-17	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-843-17	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.60E-01		1.60E-01	8.00E-02	NC	
Tank Group 04	PB-843-17	SVOC	Chrysene	218-01-9	B2	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-843-17	SVOC	Fluorene	86-73-7	D	Y	2.00E-01		2.00E-01	1.00E-01	NC	
Tank Group 04	PB-843-17	SVOC	Naphthalene	91-20-3	C	Y	2.00E-01		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-843-17	SVOC	Phenanthrene	85-01-8	D	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-843-17	SVOC	Pyrene	129-00-0	NC	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-843-17	INORG	Lead	7439-92-1	B2	Y	1.10E+01		1.10E+01	NC	NC	
Tank Group 04	PB-847-01	VOC	Benzene	71-43-2	A	Y		4.30E-04	2.15E-04	3.9E-09	4.7E-05	
Tank Group 04	PB-847-01	VOC	Cumene	98-82-8	D	Y		8.50E-04	4.25E-04	NC	7.0E-06	
Tank Group 04	PB-847-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.30E-04		NC	NC	
Tank Group 04	PB-847-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.50E-04		NC	NC	
Tank Group 04	PB-847-01	VOC	Ethyl Benzene	100-41-4	D	Y		8.50E-04	4.25E-04	NC	2.8E-06	
Tank Group 04	PB-847-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06	
Tank Group 04	PB-847-01	VOC	Toluene	108-88-3	ID	Y		8.50E-04	4.25E-04	NC	5.6E-07	
Tank Group 04	PB-847-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05	
Tank Group 04	PB-847-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05	
Tank Group 04	PB-847-01	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05	
Tank Group 04	PB-847-01	SVOC	Anthracene	120-12-7	ID	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-847-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-847-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.60E-01		1.60E-01	8.00E-02	NC	
Tank Group 04	PB-847-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-847-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.60E-01		1.60E-01	8.00E-02	NC	
Tank Group 04	PB-847-01	SVOC	Chrysene	218-01-9	B2	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-847-01	SVOC	Fluorene	86-73-7	D	Y	2.00E-01		2.00E-01	1.00E-01	NC	
Tank Group 04	PB-847-01	SVOC	Naphthalene	91-20-3	C	Y	2.00E-01		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-847-01	SVOC	Phenanthrene	85-01-8	D	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-847-01	SVOC	Pyrene	129-00-0	NC	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-847-01	INORG	Lead	7439-92-1	B2	Y	6.08E+00		6.08E+00	NC	NC	
Tank Group 04	PB-847-02	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05	
Tank Group 04	PB-847-02	VOC	Cumene	98-82-8	D	Y		9.10E-04	4.55E-04	NC	7.4E-06	
Tank Group 04	PB-847-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC	
Tank Group 04	PB-847-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.10E-04		NC	NC	
Tank Group 04	PB-847-02	VOC	Ethyl Benzene	100-41-4	D	Y		9.10E-04	4.55E-04	NC	3.0E-06	
Tank Group 04	PB-847-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06	
Tank Group 04	PB-847-02	VOC	Toluene	108-88-3	ID	Y		9.10E-04	4.55E-04	NC	6.0E-07	
Tank Group 04	PB-847-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05	
Tank Group 04	PB-847-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05	
Tank Group 04	PB-847-02	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05	
Tank Group 04	PB-847-02	SVOC	Anthracene	120-12-7	ID	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-847-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.20E-01		1.20E-01	6.00E-02	NC	
Tank Group 04	PB-847-02	SVOC	Benzo(a)pyrene	50-32								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-847-03	VOC	Toluene	108-88-3	ID	Y		8.90E-04	4.45E-04	NC	5.8E-07
Tank Group 04	PB-847-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-847-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-847-03	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-847-03	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-03	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-03	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-847-03	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-847-03	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-03	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-03	INORG	Lead	7439-92-1	B2	Y	4.07E+00		4.07E+00	NC	NC
Tank Group 04	PB-847-04	VOC	Benzene	71-43-2	A	Y		4.40E-04	2.20E-04	4.0E-09	4.8E-05
Tank Group 04	PB-847-04	VOC	Cumene	98-82-8	D	Y		8.80E-04	4.40E-04	NC	7.2E-06
Tank Group 04	PB-847-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.40E-04		NC	NC
Tank Group 04	PB-847-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.80E-04		NC	NC
Tank Group 04	PB-847-04	VOC	Ethyl Benzene	100-41-4	D	Y		8.80E-04	4.40E-04	NC	2.9E-06
Tank Group 04	PB-847-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-847-04	VOC	Toluene	108-88-3	ID	Y		8.80E-04	4.40E-04	NC	5.8E-07
Tank Group 04	PB-847-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-847-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-847-04	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-847-04	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-04	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-04	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-847-04	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-847-04	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-04	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-04	INORG	Lead	7439-92-1	B2	Y	3.69E+00		3.69E+00	NC	NC
Tank Group 04	PB-847-05	VOC	Benzene	71-43-2	A	Y		4.30E-04	2.15E-04	3.9E-09	4.7E-05
Tank Group 04	PB-847-05	VOC	Cumene	98-82-8	D	Y		8.70E-04	4.35E-04	NC	7.1E-06
Tank Group 04	PB-847-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.30E-04		NC	NC
Tank Group 04	PB-847-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.70E-04		NC	NC
Tank Group 04	PB-847-05	VOC	Ethyl Benzene	100-41-4	D	Y		8.70E-04	4.35E-04	NC	2.8E-06
Tank Group 04	PB-847-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-847-05	VOC	Toluene	108-88-3	ID	Y		8.70E-04	4.35E-04	NC	5.7E-07
Tank Group 04	PB-847-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-847-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-847-05	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-847-05	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-05	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-05	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-847-05	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-847-05	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-05	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-847-05	INORG	Lead	7439-92-1	B2	Y	3.51E+00		3.51E+00	NC	NC
Tank Group 04	PB-847-06	VOC	Benzene	71-43-2	A	Y		4.30E-04	2.15E-04	3.9E-09	4.7E-05
Tank Group 04	PB-847-06	VOC	Cumene	98-82-8	D	Y		8.60E-04	4.30E-04	NC	7.0E-06
Tank Group 04	PB-847-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.30E-04		NC	NC
Tank Group 04	PB-847-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.60E-04		NC	NC
Tank Group 04	PB-847-06	VOC	Ethyl Benzene	100-41-4	D	Y		8.60E-04	4.30E-04	NC	2.8E-06
Tank Group 04	PB-847-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-847-06	VOC	Toluene	108-88-3	ID	Y		8.60E-04	4.30E-04	NC	5.6E-07
Tank Group 04	PB-847-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-847-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-847-06	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-847-06	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-06	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-06	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-847-06	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-847-06	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-06	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-06	INORG	Lead	7439-92-1	B2	Y	4.69E+00		4.69E+00	NC	NC
Tank Group 04	PB-847-07	VOC	Benzene	71-43-2	A	Y	2.90E-04		2.90E-04	5.3E-09	6.3E-05
Tank Group 04	PB-847-07	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-847-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-04		NC	NC
Tank Group 04	PB-847-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-847-07	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-847-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-847-07	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-847-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-847-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-847-07	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-847-07	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-07	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-07	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-847-07	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-847-07	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-07	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-07	INORG	Lead	7439-92-1	B2	Y	5.30E+00		5.30E+00	NC	NC
Tank Group 04	PB-847-08	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05
Tank Group 04	PB-847-08	VOC	Cumene	98-82-8	D	Y		9.00E-04	4.50E-04	NC	7.4E-06
Tank Group 04	PB-847-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-847-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.00E-04		NC	NC
Tank Group 04	PB-847-08	VOC	Ethyl Benzene	100-41-4	D	Y		9.00E-04	4.50E-04	NC	2.9E-06
Tank Group 04	PB-847-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-847-08	VOC	Toluene	108-88-3	ID	Y		9.00E-04	4.50E-04	NC	5.9E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-847-08	INORG	Lead	7439-92-1	B2	Y	4.46E+00		4.46E+00	NC	NC
Tank Group 04	PB-847-09	VOC	Benzene	71-43-2	A	Y	2.40E-04		2.40E-04	4.4E-09	5.2E-05
Tank Group 04	PB-847-09	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-847-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.80E-04		NC	NC
Tank Group 04	PB-847-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-847-09	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-847-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-847-09	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-847-09	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-847-09	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-847-09	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-847-09	SVOC	Anthracene	120-12-7	ID	Y		1.30E-01	6.50E-02	NC	NC
Tank Group 04	PB-847-09	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.30E-01	6.50E-02	NC	NC
Tank Group 04	PB-847-09	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-847-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.30E-01	6.50E-02	NC	NC
Tank Group 04	PB-847-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-847-09	SVOC	Chrysene	218-01-9	B2	Y		1.30E-01	6.50E-02	NC	NC
Tank Group 04	PB-847-09	SVOC	Fluorene	86-73-7	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-847-09	SVOC	Naphthalene	91-20-3	C	Y		2.10E-01	1.05E-01	7.1E-07	2.0E-02
Tank Group 04	PB-847-09	SVOC	Phenanthrene	85-01-8	D	Y		1.30E-01	6.50E-02	NC	NC
Tank Group 04	PB-847-09	SVOC	Pyrene	129-00-0	NC	Y		1.30E-01	6.50E-02	NC	NC
Tank Group 04	PB-847-09	INORG	Lead	7439-92-1	B2	Y	4.13E+00		4.13E+00	NC	NC
Tank Group 04	PB-847-10	VOC	Benzene	71-43-2	A	Y		4.90E-04	2.45E-04	4.5E-09	5.3E-05
Tank Group 04	PB-847-10	VOC	Cumene	98-82-8	D	Y		9.80E-04	4.90E-04	NC	8.0E-06
Tank Group 04	PB-847-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.90E-04		NC	NC
Tank Group 04	PB-847-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.80E-04		NC	NC
Tank Group 04	PB-847-10	VOC	Ethyl Benzene	100-41-4	D	Y		9.80E-04	4.90E-04	NC	3.2E-06
Tank Group 04	PB-847-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-847-10	VOC	Toluene	108-88-3	ID	Y		9.80E-04	4.90E-04	NC	6.4E-07
Tank Group 04	PB-847-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-847-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-847-10	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-847-10	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-10	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-10	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-847-10	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-847-10	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-10	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-10	INORG	Lead	7439-92-1	B2	Y	5.37E+00		5.37E+00	NC	NC
Tank Group 04	PB-847-11	VOC	Benzene	71-43-2	A	Y	4.70E-04		4.70E-04	8.6E-09	1.0E-04
Tank Group 04	PB-847-11	VOC	Cumene	98-82-8	D	Y	1.20E-04		1.20E-04	NC	2.0E-06
Tank Group 04	PB-847-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.90E-04		NC	NC
Tank Group 04	PB-847-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.80E-04		NC	NC
Tank Group 04	PB-847-11	VOC	Ethyl Benzene	100-41-4	D	Y		9.80E-04	4.90E-04	NC	3.2E-06
Tank Group 04	PB-847-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	3.50E-03		3.50E-03	2.1E-09	7.6E-06
Tank Group 04	PB-847-11	VOC	Toluene	108-88-3	ID	Y		9.80E-04	4.90E-04	NC	6.4E-07
Tank Group 04	PB-847-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-847-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-847-11	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-847-11	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-11	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-11	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-847-11	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-847-11	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-11	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-11	INORG	Lead	7439-92-1	B2	Y	4.97E+00		4.97E+00	NC	NC
Tank Group 04	PB-847-12	VOC	Benzene	71-43-2	A	Y		4.30E-04	2.15E-04	3.9E-09	4.7E-05
Tank Group 04	PB-847-12	VOC	Cumene	98-82-8	D	Y	1.30E-02		1.30E-02	NC	2.1E-04
Tank Group 04	PB-847-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.30E-04		NC	NC
Tank Group 04	PB-847-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.70E-04		NC	NC
Tank Group 04	PB-847-12	VOC	Ethyl Benzene	100-41-4	D	Y	2.80E-03		2.80E-03	NC	1.8E-05
Tank Group 04	PB-847-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-847-12	VOC	Toluene	108-88-3	ID	Y		8.70E-04	4.35E-04	NC	5.7E-07
Tank Group 04	PB-847-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.00E-02		2.00E-02	NC	2.2E-03
Tank Group 04	PB-847-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	5.40E-02		5.40E-02	NC	5.9E-03
Tank Group 04	PB-847-12	VOC	Xylenes (total)	1330-20-7	ID	Y	9.00E-04		9.00E-04	NC	5.9E-05
Tank Group 04	PB-847-12	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-12	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-12	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-847-12	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-847-12	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-12	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-12	INORG	Lead	7439-92-1	B2	Y	6.35E+00		6.35E+00	NC	NC
Tank Group 04	PB-847-13	VOC	Benzene	71-43-2	A	Y	5.10E-02		5.10E-02	9.3E-07	1.1E-02
Tank Group 04	PB-847-13	VOC	Cumene	98-82-8	D	Y	9.40E-01		9.40E-01	NC	1.5E-02
Tank Group 04	PB-847-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		1.10E-01		NC	NC
Tank Group 04	PB-847-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		2.10E-01		NC	NC
Tank Group 04	PB-847-13	VOC	Ethyl Benzene	100-41-4	D	Y	2.00E-01		2.00E-01	NC	1.3E-03
Tank Group 04	PB-847-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		4.30E-01	2.15E-01	1.3E-07	4.7E-04
Tank Group 04	PB-847-13	VOC	Toluene	108-88-3	ID	Y		2.10E-01	1.05E-01	NC	1.4E-04
Tank Group 04	PB-847-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.20E+00		2.20E+00	NC	2.4E-01
Tank Group 04	PB-847-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.40E+00		1.40E+00	NC	1.5E-01
Tank Group 04	PB-847-13	VOC	Xylenes (total)	1330-20-7	ID	Y	2.30E-01		2.30E-01	NC	1.5E-02
Tank Group 04	PB-847-13	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-13	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-13	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-847-13	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-13	SVOC	Fluorene	86-73-7	D	Y	1.20E-01		1.20E-01	NC	NC
Tank Group 04	PB-847-13	SVOC	Naphthalene	91-20-3	C	Y	1.30E-01		1.30E-01	8.8E-07	2.4E-02
Tank Group 04	PB-847-13	SVOC	Phenanthrene	85-01-8	D	Y	2.90E-01		2.90E-01	NC	NC
Tank Group 04	PB-847-13	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-13	INORG	Lead	7439-92-1	B2	Y	3.88E+00		3.88E+00	NC	NC
Tank Group 04	PB-847-14	VOC</									

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-847-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-14	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-14	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-14	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-847-14	SVOC	Naphthalene	91-20-3	C	Y	4.30E-02		4.30E-02	2.9E-07	8.0E-03
Tank Group 04	PB-847-14	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-14	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-14	INORG	Lead	7439-92-1	B2	Y	5.24E+00		5.24E+00	NC	NC
Tank Group 04	PB-847-15	VOC	Benzene	71-43-2	A	Y	1.60E-01	3.20E-02	1.60E-01	2.9E-06	3.5E-02
Tank Group 04	PB-847-15	VOC	Cumene	98-82-8	D	Y	3.20E+00		3.20E+00	NC	5.2E-02
Tank Group 04	PB-847-15	VOC	1,2-Dibromoethane	106-93-4	LC	N		1.20E-01		NC	NC
Tank Group 04	PB-847-15	VOC	1,2-Dichloroethane	107-06-2	B2	N		2.30E-01		NC	NC
Tank Group 04	PB-847-15	VOC	Ethyl Benzene	100-41-4	D	Y	5.40E+00		5.40E+00	NC	3.5E-02
Tank Group 04	PB-847-15	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		4.60E-01	2.30E-01	1.4E-07	5.0E-04
Tank Group 04	PB-847-15	VOC	Toluene	108-88-3	ID	Y		2.30E-01	1.15E-01	NC	1.5E-04
Tank Group 04	PB-847-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	5.10E+00	1.00E-01	5.10E+00	NC	5.6E-01
Tank Group 04	PB-847-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	3.20E+00		3.20E+00	NC	3.5E-01
Tank Group 04	PB-847-15	VOC	Xylenes (total)	1330-20-7	ID	Y	2.53E+00	1.00E-01	2.53E+00	NC	1.7E-01
Tank Group 04	PB-847-15	SVOC	Anthracene	120-12-7	ID	Y	1.70E+00		1.70E+00	NC	NC
Tank Group 04	PB-847-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E+00	5.50E-01	NC	NC
Tank Group 04	PB-847-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E+00	7.50E-01	NC	NC
Tank Group 04	PB-847-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E+00	5.50E-01	NC	NC
Tank Group 04	PB-847-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E+00	7.50E-01	NC	NC
Tank Group 04	PB-847-15	SVOC	Chrysene	218-01-9	B2	Y		1.10E+00	5.50E-01	NC	NC
Tank Group 04	PB-847-15	SVOC	Fluorene	86-73-7	D	Y	5.30E+00		5.30E+00	NC	NC
Tank Group 04	PB-847-15	SVOC	Naphthalene	91-20-3	C	Y	7.50E+00		7.50E+00	5.1E-05	1.4E+00
Tank Group 04	PB-847-15	SVOC	Phenanthrene	85-01-8	D	Y	1.20E+01		1.20E+01	NC	NC
Tank Group 04	PB-847-15	SVOC	Pyrene	129-00-0	NC	Y	5.00E-01		5.00E-01	NC	NC
Tank Group 04	PB-847-15	INORG	Lead	7439-92-1	B2	Y	6.75E+00		6.75E+00	NC	NC
Tank Group 04	PB-847-16	VOC	Benzene	71-43-2	A	Y		4.70E-04	2.35E-04	4.3E-09	5.1E-05
Tank Group 04	PB-847-16	VOC	Cumene	98-82-8	D	Y		9.40E-04	4.70E-04	NC	7.7E-06
Tank Group 04	PB-847-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.70E-04		NC	NC
Tank Group 04	PB-847-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.40E-04		NC	NC
Tank Group 04	PB-847-16	VOC	Ethyl Benzene	100-41-4	D	Y		9.40E-04	4.70E-04	NC	3.1E-06
Tank Group 04	PB-847-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-847-16	VOC	Toluene	108-88-3	ID	Y		9.40E-04	4.70E-04	NC	6.2E-07
Tank Group 04	PB-847-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-847-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-847-16	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-847-16	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-16	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-16	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-847-16	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-847-16	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-16	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-16	INORG	Lead	7439-92-1	B2	Y	5.17E+00		5.17E+00	NC	NC
Tank Group 04	PB-847-17	VOC	Benzene	71-43-2	A	Y	4.20E-03		4.20E-03	7.7E-08	9.2E-04
Tank Group 04	PB-847-17	VOC	Cumene	98-82-8	D	Y	2.70E-02		2.70E-02	NC	4.4E-04
Tank Group 04	PB-847-17	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.30E-04		NC	NC
Tank Group 04	PB-847-17	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-847-17	VOC	Ethyl Benzene	100-41-4	D	Y	1.80E-02		1.80E-02	NC	1.2E-04
Tank Group 04	PB-847-17	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-847-17	VOC	Toluene	108-88-3	ID	Y	7.30E-04		7.30E-04	NC	9.6E-07
Tank Group 04	PB-847-17	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.10E-01		1.10E-01	NC	1.2E-02
Tank Group 04	PB-847-17	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	8.80E-03		8.80E-03	NC	9.6E-04
Tank Group 04	PB-847-17	VOC	Xylenes (total)	1330-20-7	ID	Y	1.67E-02		1.67E-02	NC	1.1E-03
Tank Group 04	PB-847-17	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-17	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-17	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-17	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-17	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-847-17	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-17	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-847-17	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-847-17	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-17	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-847-17	INORG	Lead	7439-92-1	B2	Y	5.26E+00		5.26E+00	NC	NC
Tank Group 04	PB-848-01	VOC	Benzene	71-43-2	A	Y	1.00E-03		1.00E-03	1.8E-08	2.2E-04
Tank Group 04	PB-848-01	VOC	Cumene	98-82-8	D	Y	1.40E-04		1.40E-04	NC	2.3E-06
Tank Group 04	PB-848-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.80E-04		NC	NC
Tank Group 04	PB-848-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-848-01	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-848-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-848-01	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-848-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-848-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.60E-04		2.60E-04	NC	2.8E-05
Tank Group 04	PB-848-01	VOC	Xylenes (total)	1330-20-7	ID	Y	1.55E-03		1.55E-03	NC	1.0E-04
Tank Group 04	PB-848-01	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-01	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-01	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-848-01	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-848-01	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-01	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-01	INORG	Lead	7439-92-1	B2	Y	6.75E+00		6.75E+00	NC	NC
Tank Group 04	PB-848-02	VOC	Benzene	71-43-2	A	Y		4.70E-04	2.35E-04	4.3E-09	5.1E-05
Tank Group 04	PB-848-02	VOC	Cumene	98-82-8	D	Y		9.40E-04	4.70E-04	NC	7.7E-06
Tank Group 04	PB-848-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.70E-04		NC	NC
Tank Group 04	PB-848-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.40E-04		NC	NC
Tank Group 04	PB-848-02	VOC	Ethyl Benzene	100-41-4	D	Y		9.40E-04	4.70E-04	NC	3.1E-06
Tank Group 04	PB-848-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-848-02	VOC	Toluene	108-88-3	ID	Y		9.40E-04	4.70E-04	NC	6.2E-07
Tank Group 04	PB-848-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-848-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-848-02	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-848-02	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-848-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02		

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-848-03	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-848-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-848-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-848-03	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-848-03	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-848-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-848-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-848-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-848-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-848-03	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-848-03	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-848-03	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-848-03	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-848-03	SVOC	Pyrene	129-00-0	NC	Y	2.40E-02	2.40E-02	2.40E-02	NC	NC
Tank Group 04	PB-848-03	INORG	Lead	7439-92-1	B2	Y	5.16E+01	5.16E+01	5.16E+01	NC	NC
Tank Group 04	PB-848-04	VOC	Benzene	71-43-2	A	Y	1.80E+00	1.80E+00	1.80E+00	3.3E-05	3.9E-01
Tank Group 04	PB-848-04	VOC	Cumene	98-82-8	D	Y	4.60E-01	4.60E-01	4.60E-01	NC	7.5E-03
Tank Group 04	PB-848-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		1.30E-01		NC	NC
Tank Group 04	PB-848-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		2.50E-01		NC	NC
Tank Group 04	PB-848-04	VOC	Ethyl Benzene	100-41-4	D	Y	9.00E-01	9.00E-01	9.00E-01	NC	5.9E-03
Tank Group 04	PB-848-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		5.10E-01	2.55E-01	1.6E-07	5.6E-04
Tank Group 04	PB-848-04	VOC	Toluene	108-88-3	ID	Y		2.50E-01	1.25E-01	NC	1.6E-04
Tank Group 04	PB-848-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	4.30E+00	4.30E+00	4.30E+00	NC	4.7E-01
Tank Group 04	PB-848-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.70E+00	2.70E+00	2.70E+00	NC	2.9E-01
Tank Group 04	PB-848-04	VOC	Xylenes (total)	1330-20-7	ID	Y	3.82E+00	3.82E+00	3.82E+00	NC	2.5E-01
Tank Group 04	PB-848-04	SVOC	Anthracene	120-12-7	ID	Y	2.90E-01	2.90E-01	2.90E-01	NC	NC
Tank Group 04	PB-848-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-04	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-04	SVOC	Fluorene	86-73-7	D	Y	2.30E+00	2.30E+00	2.30E+00	NC	NC
Tank Group 04	PB-848-04	SVOC	Naphthalene	91-20-3	C	Y	1.40E+00	1.40E+00	1.40E+00	9.5E-06	2.6E-01
Tank Group 04	PB-848-04	SVOC	Phenanthrene	85-01-8	D	Y	1.90E+00	1.90E+00	1.90E+00	NC	NC
Tank Group 04	PB-848-04	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-04	INORG	Lead	7439-92-1	B2	Y	7.16E+02	7.16E+02	7.16E+02	NC	NC
Tank Group 04	PB-848-05	VOC	Benzene	71-43-2	A	Y		5.25E-04	2.63E-04	4.8E-09	5.7E-05
Tank Group 04	PB-848-05	VOC	Cumene	98-82-8	D	Y		1.04E-03	5.20E-04	NC	8.5E-06
Tank Group 04	PB-848-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.25E-04		NC	NC
Tank Group 04	PB-848-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.04E-03		NC	NC
Tank Group 04	PB-848-05	VOC	Ethyl Benzene	100-41-4	D	Y		1.04E-03	5.20E-04	NC	3.4E-06
Tank Group 04	PB-848-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	6.55E-04	6.55E-04	6.55E-04	4.0E-10	1.4E-06
Tank Group 04	PB-848-05	VOC	Toluene	108-88-3	ID	Y		1.04E-03	5.20E-04	NC	6.8E-07
Tank Group 04	PB-848-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-848-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-848-05	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-848-05	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	5.75E-02	5.75E-02	5.75E-02	NC	NC
Tank Group 04	PB-848-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	6.40E-02	6.40E-02	6.40E-02	NC	NC
Tank Group 04	PB-848-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	5.65E-02	5.65E-02	5.65E-02	NC	NC
Tank Group 04	PB-848-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	5.30E-02	5.30E-02	5.30E-02	NC	NC
Tank Group 04	PB-848-05	SVOC	Chrysene	218-01-9	B2	Y	5.40E-02	5.40E-02	5.40E-02	NC	NC
Tank Group 04	PB-848-05	SVOC	Fluorene	86-73-7	D	Y	8.45E-02	8.45E-02	8.45E-02	NC	NC
Tank Group 04	PB-848-05	SVOC	Naphthalene	91-20-3	C	Y	6.70E-02	6.70E-02	6.70E-02	4.5E-07	1.2E-02
Tank Group 04	PB-848-05	SVOC	Phenanthrene	85-01-8	D	Y	7.25E-02	7.25E-02	7.25E-02	NC	NC
Tank Group 04	PB-848-05	SVOC	Pyrene	129-00-0	NC	Y	7.00E-02	7.00E-02	7.00E-02	NC	NC
Tank Group 04	PB-848-05	INORG	Lead	7439-92-1	B2	Y	1.35E+01	1.35E+01	1.35E+01	NC	NC
Tank Group 04	PB-848-06	VOC	Benzene	71-43-2	A	Y		3.20E-02	1.60E-02	2.9E-07	3.5E-03
Tank Group 04	PB-848-06	VOC	Cumene	98-82-8	D	Y	3.00E+00	3.00E+00	3.00E+00	NC	4.9E-02
Tank Group 04	PB-848-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.20E-02		NC	NC
Tank Group 04	PB-848-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		6.40E-02		NC	NC
Tank Group 04	PB-848-06	VOC	Ethyl Benzene	100-41-4	D	Y	1.00E+00	1.00E+00	1.00E+00	NC	6.5E-03
Tank Group 04	PB-848-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.30E-01	6.50E-02	4.0E-08	1.4E-04
Tank Group 04	PB-848-06	VOC	Toluene	108-88-3	ID	Y		6.40E-02	3.20E-02	NC	4.2E-05
Tank Group 04	PB-848-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	3.50E+01	3.50E+01	3.50E+01	NC	3.8E+00
Tank Group 04	PB-848-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.60E-01	1.60E-01	1.60E-01	NC	1.7E-02
Tank Group 04	PB-848-06	VOC	Xylenes (total)	1330-20-7	ID	Y		1.30E-01	6.50E-02	NC	4.3E-03
Tank Group 04	PB-848-06	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-06	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-06	SVOC	Fluorene	86-73-7	D	Y	1.40E-01	1.40E-01	1.40E-01	NC	NC
Tank Group 04	PB-848-06	SVOC	Naphthalene	91-20-3	C	Y	1.70E+00	1.70E+00	1.70E+00	1.2E-05	3.2E-01
Tank Group 04	PB-848-06	SVOC	Phenanthrene	85-01-8	D	Y	1.50E-01	1.50E-01	1.50E-01	NC	NC
Tank Group 04	PB-848-06	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-06	INORG	Lead	7439-92-1	B2	Y	7.20E+00	7.20E+00	7.20E+00	NC	NC
Tank Group 04	PB-848-07	VOC	Benzene	71-43-2	A	Y	1.40E-01	1.40E-01	1.40E-01	2.6E-06	3.1E-02
Tank Group 04	PB-848-07	VOC	Cumene	98-82-8	D	Y	1.10E+00	1.10E+00	1.10E+00	NC	1.8E-02
Tank Group 04	PB-848-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.40E-02		NC	NC
Tank Group 04	PB-848-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		6.70E-02		NC	NC
Tank Group 04	PB-848-07	VOC	Ethyl Benzene	100-41-4	D	Y	1.60E+00	1.60E+00	1.60E+00	NC	1.0E-02
Tank Group 04	PB-848-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	2.60E-04	1.30E-01	2.60E-04	1.6E-10	5.7E-07
Tank Group 04	PB-848-07	VOC	Toluene	108-88-3	ID	Y	8.70E-02	8.70E-02	8.70E-02	NC	1.1E-04
Tank Group 04	PB-848-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.20E+00	2.20E+00	2.20E+00	NC	2.4E-01
Tank Group 04	PB-848-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.00E+00	1.00E+00	1.00E+00	NC	1.1E-01
Tank Group 04	PB-848-07	VOC	Xylenes (total)	1330-20-7	ID	Y	5.62E-01	5.62E-01	5.62E-01	NC	3.7E-02
Tank Group 04	PB-848-07	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.50E-02	2.50E-02	2.50E-02	NC	NC
Tank Group 04	PB-848-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	6.50E-02	6.50E-02	6.50E-02	NC	NC
Tank Group 04	PB-848-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	4.90E-02	4.90E-02	4.90E-02	NC	NC
Tank Group 04	PB-848-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	6.40E-02	6.40E-02	6.40E-02	NC	NC
Tank Group 04	PB-848-07	SVOC	Chrysene	218-01-9	B2	Y	2.80E-02	2.80E-02	2.80E-02	NC	NC
Tank Group 04	PB-848-07	SVOC	Fluorene	86-73-7	D	Y	8.90E-02	8.90E-02	8.90E-02	NC	NC
Tank Group 04	PB-848-07	SVOC	Naphthalene	91-20-3	C	Y	2.60E-01	2.00E-01	2.60E-01	1.8E-06	4.8E-02
Tank Group 04	PB-848-07	SVOC	Phenanthrene	85-01-8	D	Y	5.90E-02	5.90E-02	5.90E-02	NC	NC
Tank Group 04	PB-848-07	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-07	INORG	Lead	7439-92-1	B2	Y	3.20E+03	3.20E+03	3.20E+03	NC	NC
Tank Group 04	PB-848-08	VOC	Benzene	71-43-2	A	Y	3.00E-04	3.00E-04	3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-848-08	VOC	Cumene	98-82-8	D	Y	9.90E-03	9.90E-03	9.90E-03	NC	1.6E-04
Tank Group 04	PB-848-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 0											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-848-08	INORG	Lead	7439-92-1	B2	Y	2.46E+02		2.46E+02	NC	NC
Tank Group 04	PB-848-09	VOC	Benzene	71-43-2	A	Y	2.20E-04		2.20E-04	4.0E-09	4.8E-05
Tank Group 04	PB-848-09	VOC	Cumene	98-82-8	D	Y	1.10E-03		1.10E-03	NC	1.8E-05
Tank Group 04	PB-848-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.90E-04		NC	NC
Tank Group 04	PB-848-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.80E-04		NC	NC
Tank Group 04	PB-848-09	VOC	Ethyl Benzene	100-41-4	D	Y	4.60E-04		4.60E-04	NC	3.0E-06
Tank Group 04	PB-848-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-848-09	VOC	Toluene	108-88-3	ID	Y		9.80E-04	4.90E-04	NC	6.4E-07
Tank Group 04	PB-848-09	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.30E-03		1.30E-03	NC	1.4E-04
Tank Group 04	PB-848-09	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.80E-04		2.80E-04	NC	3.1E-05
Tank Group 04	PB-848-09	VOC	Xylenes (total)	1330-20-7	ID	Y	9.30E-04		9.30E-04	NC	6.1E-05
Tank Group 04	PB-848-09	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-09	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-09	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-09	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-09	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-848-09	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-848-09	SVOC	Phenanthrene	85-01-8	D	Y	3.40E-02		3.40E-02	NC	NC
Tank Group 04	PB-848-09	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-09	INORG	Lead	7439-92-1	B2	Y	1.14E+03		1.14E+03	NC	NC
Tank Group 04	PB-848-10	VOC	Benzene	71-43-2	A	Y	5.20E-04		5.20E-04	9.5E-09	1.1E-04
Tank Group 04	PB-848-10	VOC	Cumene	98-82-8	D	Y	6.60E-03		6.60E-03	NC	1.1E-04
Tank Group 04	PB-848-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.30E-04		NC	NC
Tank Group 04	PB-848-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-848-10	VOC	Ethyl Benzene	100-41-4	D	Y	2.40E-03		2.40E-03	NC	1.6E-05
Tank Group 04	PB-848-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.50E-03	1.25E-03	7.6E-10	2.7E-06
Tank Group 04	PB-848-10	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-848-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	8.10E-04		8.10E-04	NC	8.8E-05
Tank Group 04	PB-848-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.70E-04		4.70E-04	NC	5.1E-05
Tank Group 04	PB-848-10	VOC	Xylenes (total)	1330-20-7	ID	Y		2.50E-03	1.25E-03	NC	8.2E-05
Tank Group 04	PB-848-10	SVOC	Anthracene	120-12-7	ID	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-848-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-848-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-848-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-848-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-848-10	SVOC	Chrysene	218-01-9	B2	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-848-10	SVOC	Fluorene	86-73-7	D	Y		2.30E-01	1.15E-01	NC	NC
Tank Group 04	PB-848-10	SVOC	Naphthalene	91-20-3	C	Y		2.30E-01	1.15E-01	7.8E-07	2.1E-02
Tank Group 04	PB-848-10	SVOC	Phenanthrene	85-01-8	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-848-10	SVOC	Pyrene	129-00-0	NC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-848-10	INORG	Lead	7439-92-1	B2	Y	7.21E+02		7.21E+02	NC	NC
Tank Group 04	PB-848-11	VOC	Benzene	71-43-2	A	Y	8.70E-01		8.70E-01	1.6E-05	1.9E-01
Tank Group 04	PB-848-11	VOC	Cumene	98-82-8	D	Y	2.90E-01		2.90E-01	NC	4.7E-03
Tank Group 04	PB-848-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.40E-02		NC	NC
Tank Group 04	PB-848-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		6.80E-02		NC	NC
Tank Group 04	PB-848-11	VOC	Ethyl Benzene	100-41-4	D	Y	1.60E-01		1.60E-01	NC	1.0E-03
Tank Group 04	PB-848-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.40E-01	7.00E-02	4.3E-08	1.5E-04
Tank Group 04	PB-848-11	VOC	Toluene	108-88-3	ID	Y	1.20E-01		1.20E-01	NC	1.6E-04
Tank Group 04	PB-848-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.20E-01		1.20E-01	NC	1.3E-02
Tank Group 04	PB-848-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	7.60E-02		7.60E-02	NC	8.3E-03
Tank Group 04	PB-848-11	VOC	Xylenes (total)	1330-20-7	ID	Y	3.94E-01		3.94E-01	NC	2.6E-02
Tank Group 04	PB-848-11	SVOC	Anthracene	120-12-7	ID	Y	8.10E-02		8.10E-02	NC	NC
Tank Group 04	PB-848-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.90E-02		2.90E-02	NC	NC
Tank Group 04	PB-848-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-848-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	3.70E-02		3.70E-02	NC	NC
Tank Group 04	PB-848-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	3.90E-02		3.90E-02	NC	NC
Tank Group 04	PB-848-11	SVOC	Chrysene	218-01-9	B2	Y	3.40E-02		3.40E-02	NC	NC
Tank Group 04	PB-848-11	SVOC	Fluorene	86-73-7	D	Y	2.50E-01		2.50E-01	NC	NC
Tank Group 04	PB-848-11	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-848-11	SVOC	Phenanthrene	85-01-8	D	Y	3.50E-01		3.50E-01	NC	NC
Tank Group 04	PB-848-11	SVOC	Pyrene	129-00-0	NC	Y	5.80E-02		5.80E-02	NC	NC
Tank Group 04	PB-848-11	INORG	Lead	7439-92-1	B2	Y	1.50E+01		1.50E+01	NC	NC
Tank Group 04	PB-848-12	VOC	Benzene	71-43-2	A	Y		5.50E-04	2.75E-04	5.0E-09	6.0E-05
Tank Group 04	PB-848-12	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-848-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.50E-04		NC	NC
Tank Group 04	PB-848-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-848-12	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-848-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-848-12	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-848-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.20E-03		1.10E-03	NC	1.2E-04
Tank Group 04	PB-848-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.20E-03		1.10E-03	NC	1.2E-04
Tank Group 04	PB-848-12	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-848-12	SVOC	Anthracene	120-12-7	ID	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-848-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.30E-01		3.30E-01	NC	NC
Tank Group 04	PB-848-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	3.00E-01		3.00E-01	NC	NC
Tank Group 04	PB-848-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	3.60E-01		3.60E-01	NC	NC
Tank Group 04	PB-848-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.10E-01		1.10E-01	NC	NC
Tank Group 04	PB-848-12	SVOC	Chrysene	218-01-9	B2	Y	3.00E-01		3.00E-01	NC	NC
Tank Group 04	PB-848-12	SVOC	Fluorene	86-73-7	D	Y	1.30E-01		1.30E-01	NC	NC
Tank Group 04	PB-848-12	SVOC	Naphthalene	91-20-3	C	Y	4.30E-02		4.30E-02	2.9E-07	8.0E-03
Tank Group 04	PB-848-12	SVOC	Phenanthrene	85-01-8	D	Y	6.80E-01		6.80E-01	NC	NC
Tank Group 04	PB-848-12	SVOC	Pyrene	129-00-0	NC	Y	5.10E-01		5.10E-01	NC	NC
Tank Group 04	PB-848-12	INORG	Lead	7439-92-1	B2	Y	2.82E+02		2.82E+02	NC	NC
Tank Group 04	PB-848-13	VOC	Benzene	71-43-2	A	Y		3.60E-02	1.80E-02	3.3E-07	3.9E-03
Tank Group 04	PB-848-13	VOC	Cumene	98-82-8	D	Y	1.00E-02		1.00E-02	NC	1.6E-04
Tank Group 04	PB-848-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.60E-02		NC	NC
Tank Group 04	PB-848-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		7.20E-02		NC	NC
Tank Group 04	PB-848-13	VOC	Ethyl Benzene	100-41-4	D	Y	1.80E-02		1.80E-02	NC	1.2E-04
Tank Group 04	PB-848-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.40E-01	7.00E-02	4.3E-08	1.5E-04
Tank Group 04	PB-848-13	VOC	Toluene	108-88-3	ID	Y	3.90E-02		3.90E-02	NC	5.1E-05
Tank Group 04	PB-848-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.40E-01	7.00E-02	NC	7.6E-03
Tank Group 04	PB-848-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.40E-01	7.00E-02	NC	7.6E-03
Tank Group 04	PB-848-13	VOC	Xylenes (total)	1330-20-7	ID	Y		1.40E-01	7.00E-02	NC	4.6E-03
Tank Group 04	PB-848-13	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-13	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-13	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-13	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-13	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-848-13	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-848-13	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-13	SVOC	Pyrene	129-00-0	NC	Y	2.20E-02		2.20E-02	NC	NC
Tank Group 04	PB-848-13	INORG	Lead	7439-92-1	B2	Y	2.85E+01		2.85E+01	NC	NC
Tank Group 04	PB-848-14	VOC</									

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-848-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-14	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-14	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-14	SVOC	Fluorene	86-73-7	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-848-14	SVOC	Naphthalene	91-20-3	C	Y		2.10E-01	1.05E-01	7.1E-07	2.0E-02
Tank Group 04	PB-848-14	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-14	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-14	INORG	Lead	7439-92-1	B2	Y	1.57E+01		1.57E+01	NC	NC
Tank Group 04	PB-848-15	VOC	Benzene	71-43-2	A	Y	1.10E+00		1.10E+00	2.0E-05	2.4E-01
Tank Group 04	PB-848-15	VOC	Cumene	98-82-8	D	Y	2.40E+00		2.40E+00	NC	3.9E-02
Tank Group 04	PB-848-15	VOC	1,2-Dibromoethane	106-93-4	LC	N		2.80E-02		NC	NC
Tank Group 04	PB-848-15	VOC	1,2-Dichloroethane	107-06-2	B2	N		5.50E-02		NC	NC
Tank Group 04	PB-848-15	VOC	Ethyl Benzene	100-41-4	D	Y	1.60E+01		1.60E+01	NC	1.0E-01
Tank Group 04	PB-848-15	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.10E-01	5.50E-02	3.3E-08	1.2E-04
Tank Group 04	PB-848-15	VOC	Toluene	108-88-3	ID	Y	7.80E-02		7.80E-02	NC	1.0E-04
Tank Group 04	PB-848-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	7.70E+00		7.70E+00	NC	8.4E-01
Tank Group 04	PB-848-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.00E+00		4.00E+00	NC	4.4E-01
Tank Group 04	PB-848-15	VOC	Xylenes (total)	1330-20-7	ID	Y	3.80E+01		3.80E+01	NC	2.5E+00
Tank Group 04	PB-848-15	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-15	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-15	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-848-15	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-848-15	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-15	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-15	INORG	Lead	7439-92-1	B2	Y	9.28E+00		9.28E+00	NC	NC
Tank Group 04	PB-848-16	VOC	Benzene	71-43-2	A	Y		6.00E-04	3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-848-16	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-848-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.00E-04		NC	NC
Tank Group 04	PB-848-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-848-16	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-848-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-848-16	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-848-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-848-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-848-16	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-848-16	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-16	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-16	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-848-16	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-848-16	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-16	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-16	INORG	Lead	7439-92-1	B2	Y	6.41E+00		6.41E+00	NC	NC
Tank Group 04	PB-848-17	VOC	Benzene	71-43-2	A	Y		7.70E-04	3.85E-04	7.0E-09	8.4E-05
Tank Group 04	PB-848-17	VOC	Cumene	98-82-8	D	Y		1.50E-03	7.50E-04	NC	1.2E-05
Tank Group 04	PB-848-17	VOC	1,2-Dibromoethane	106-93-4	LC	N		7.70E-04		NC	NC
Tank Group 04	PB-848-17	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.50E-03		NC	NC
Tank Group 04	PB-848-17	VOC	Ethyl Benzene	100-41-4	D	Y		1.50E-03	7.50E-04	NC	4.9E-06
Tank Group 04	PB-848-17	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.10E-03	1.55E-03	9.4E-10	3.4E-06
Tank Group 04	PB-848-17	VOC	Toluene	108-88-3	ID	Y		1.50E-03	7.50E-04	NC	9.8E-07
Tank Group 04	PB-848-17	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.10E-03	1.55E-03	NC	1.7E-04
Tank Group 04	PB-848-17	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.10E-03	1.55E-03	NC	1.7E-04
Tank Group 04	PB-848-17	VOC	Xylenes (total)	1330-20-7	ID	Y		3.10E-03	1.55E-03	NC	1.0E-04
Tank Group 04	PB-848-17	SVOC	Anthracene	120-12-7	ID	Y	9.00E-02		9.00E-02	NC	NC
Tank Group 04	PB-848-17	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	4.50E+00		4.50E+00	NC	NC
Tank Group 04	PB-848-17	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	7.20E+00		7.20E+00	NC	NC
Tank Group 04	PB-848-17	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	4.40E+00		4.40E+00	NC	NC
Tank Group 04	PB-848-17	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	5.20E+00		5.20E+00	NC	NC
Tank Group 04	PB-848-17	SVOC	Chrysene	218-01-9	B2	Y	4.40E+00		4.40E+00	NC	NC
Tank Group 04	PB-848-17	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-848-17	SVOC	Naphthalene	91-20-3	C	Y		2.60E-02	2.60E-02	1.8E-07	4.8E-03
Tank Group 04	PB-848-17	SVOC	Phenanthrene	85-01-8	D	Y		3.40E-01	3.40E-01	NC	NC
Tank Group 04	PB-848-17	SVOC	Pyrene	129-00-0	NC	Y		7.90E-01	7.90E-01	NC	NC
Tank Group 04	PB-848-17	INORG	Lead	7439-92-1	B2	Y	1.84E+03		1.84E+03	NC	NC
Tank Group 04	PB-848-18	VOC	Benzene	71-43-2	A	Y		1.00E-02	1.00E-02	1.8E-07	2.2E-03
Tank Group 04	PB-848-18	VOC	Cumene	98-82-8	D	Y		6.00E-02	6.00E-02	NC	9.8E-04
Tank Group 04	PB-848-18	VOC	1,2-Dibromoethane	106-93-4	LC	N		2.70E-02		NC	NC
Tank Group 04	PB-848-18	VOC	1,2-Dichloroethane	107-06-2	B2	N		5.40E-02		NC	NC
Tank Group 04	PB-848-18	VOC	Ethyl Benzene	100-41-4	D	Y	1.70E-02		1.70E-02	NC	1.1E-04
Tank Group 04	PB-848-18	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.10E-01	5.50E-02	3.3E-08	1.2E-04
Tank Group 04	PB-848-18	VOC	Toluene	108-88-3	ID	Y		5.40E-02	2.70E-02	NC	3.5E-05
Tank Group 04	PB-848-18	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	5.80E-02		5.80E-02	NC	6.3E-03
Tank Group 04	PB-848-18	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.10E-02		1.10E-02	NC	1.2E-03
Tank Group 04	PB-848-18	VOC	Xylenes (total)	1330-20-7	ID	Y	8.30E-02		8.30E-02	NC	5.4E-03
Tank Group 04	PB-848-18	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-18	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-18	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-18	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-18	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-848-18	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-18	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-848-18	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-848-18	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-18	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-848-18	INORG	Lead	7439-92-1	B2	Y	6.07E+01		6.07E+01	NC	NC
Tank Group 04	PB-881-01	VOC	Benzene	71-43-2	A	Y		4.30E-04	2.15E-04	3.9E-09	4.7E-05
Tank Group 04	PB-881-01	VOC	Cumene	98-82-8	D	Y	3.20E-03		3.20E-03	NC	5.2E-05
Tank Group 04	PB-881-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.30E-04		NC	NC
Tank Group 04	PB-881-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.70E-04		NC	NC
Tank Group 04	PB-881-01	VOC	Ethyl Benzene	100-41-4	D	Y		8.70E-04	4.35E-04	NC	2.8E-06
Tank Group 04	PB-881-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-881-01	VOC	Toluene	108-88-3	ID	Y		8.70E-04	4.35E-04	NC	5.7E-07
Tank Group 04	PB-881-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.30E-01	6.50E-02	NC	7.1E-03
Tank Group 04	PB-881-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	9.10E-02		9.10E-02	NC	9.9E-03
Tank Group 04	PB-881-01	VOC	Xylenes (total)	1330-20-7	ID	Y	5.50E-02		5.50E-02	NC	3.6E-03
Tank Group 04	PB-881-01	SVOC	Anthracene	120-12-7	ID	Y		5.20E-01	2.60E-01	NC	NC
Tank Group 04	PB-881-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		5.20E-01	2.60E-01	NC	NC
Tank Group 04	PB-881-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		7.00E-01	3.50E-01	NC	NC
Tank Group 04	PB-881-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		5.20E-01	2.60E-01	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-881-02	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-881-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-881-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-881-02	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-881-02	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-02	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-02	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-881-02	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-881-02	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-02	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-02	INORG	Lead	7439-92-1	B2	Y	1.49E+00		1.49E+00	NC	NC
Tank Group 04	PB-881-03	VOC	Benzene	71-43-2	A	Y		4.60E-04	2.30E-04	4.2E-09	5.0E-05
Tank Group 04	PB-881-03	VOC	Cumene	98-82-8	D	Y		9.30E-04	4.65E-04	NC	7.6E-06
Tank Group 04	PB-881-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-881-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.30E-04		NC	NC
Tank Group 04	PB-881-03	VOC	Ethyl Benzene	100-41-4	D	Y		9.30E-04	4.65E-04	NC	3.0E-06
Tank Group 04	PB-881-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-881-03	VOC	Toluene	108-88-3	ID	Y		9.30E-04	4.65E-04	NC	6.1E-07
Tank Group 04	PB-881-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-881-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-881-03	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-881-03	SVOC	Anthracene	120-12-7	ID	Y	9.70E-02		9.70E-02	NC	NC
Tank Group 04	PB-881-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	4.00E-02		4.00E-02	NC	NC
Tank Group 04	PB-881-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-03	SVOC	Chrysene	218-01-9	B2	Y	2.00E-01		2.00E-01	NC	NC
Tank Group 04	PB-881-03	SVOC	Fluorene	86-73-7	D	Y	5.10E-01		5.10E-01	NC	NC
Tank Group 04	PB-881-03	SVOC	Naphthalene	91-20-3	C	Y	1.20E+00		1.20E+00	8.1E-06	2.2E-01
Tank Group 04	PB-881-03	SVOC	Phenanthrene	85-01-8	D	Y	1.00E+00		1.00E+00	NC	NC
Tank Group 04	PB-881-03	SVOC	Pyrene	129-00-0	NC	Y	1.50E-01		1.50E-01	NC	NC
Tank Group 04	PB-881-03	INORG	Lead	7439-92-1	B2	Y	1.78E+00		1.78E+00	NC	NC
Tank Group 04	PB-881-04	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-881-04	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-881-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-881-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-881-04	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-881-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-881-04	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-881-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-04	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-881-04	SVOC	Anthracene	120-12-7	ID	Y	4.70E-02		4.70E-02	NC	NC
Tank Group 04	PB-881-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.30E-01		2.30E-01	NC	NC
Tank Group 04	PB-881-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	2.50E-01		2.50E-01	NC	NC
Tank Group 04	PB-881-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	2.90E-01		2.90E-01	NC	NC
Tank Group 04	PB-881-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.40E-01		1.40E-01	NC	NC
Tank Group 04	PB-881-04	SVOC	Chrysene	218-01-9	B2	Y	2.20E-01		2.20E-01	NC	NC
Tank Group 04	PB-881-04	SVOC	Fluorene	86-73-7	D	Y	1.80E-02		1.80E-02	NC	NC
Tank Group 04	PB-881-04	SVOC	Naphthalene	91-20-3	C	Y	4.80E-02		4.80E-02	3.3E-07	8.9E-03
Tank Group 04	PB-881-04	SVOC	Phenanthrene	85-01-8	D	Y	2.10E-01		2.10E-01	NC	NC
Tank Group 04	PB-881-04	SVOC	Pyrene	129-00-0	NC	Y	2.80E-01		2.80E-01	NC	NC
Tank Group 04	PB-881-04	INORG	Lead	7439-92-1	B2	Y	8.92E+01		8.92E+01	NC	NC
Tank Group 04	PB-881-05	VOC	Benzene	71-43-2	A	Y		4.90E-04	2.45E-04	4.5E-09	5.3E-05
Tank Group 04	PB-881-05	VOC	Cumene	98-82-8	D	Y		9.80E-04	4.90E-04	NC	8.0E-06
Tank Group 04	PB-881-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.90E-04		NC	NC
Tank Group 04	PB-881-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.80E-04		NC	NC
Tank Group 04	PB-881-05	VOC	Ethyl Benzene	100-41-4	D	Y		9.80E-04	4.90E-04	NC	3.2E-06
Tank Group 04	PB-881-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.20E-03		1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-881-05	VOC	Toluene	108-88-3	ID	Y		9.80E-04	4.90E-04	NC	6.4E-07
Tank Group 04	PB-881-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-05	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-881-05	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-881-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-881-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-881-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-881-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-881-05	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-881-05	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-881-05	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-881-05	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-881-05	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-881-05	INORG	Lead	7439-92-1	B2	Y	7.70E+00		7.70E+00	NC	NC
Tank Group 04	PB-881-06	VOC	Benzene	71-43-2	A	Y		5.60E-04	2.80E-04	5.1E-09	6.1E-05
Tank Group 04	PB-881-06	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-881-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.60E-04		NC	NC
Tank Group 04	PB-881-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-881-06	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-881-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-881-06	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-881-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-881-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-881-06	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-881-06	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-06	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-06	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-881-06	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-881-06	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-06	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-06	INORG	Lead	7439-92-1	B2	Y	1.45E+00		1.45E+00	NC	NC
Tank Group 04	PB-881-07	VOC	Benzene	71-43-2	A	Y		2.65E-02	1.33E-02	2.4E-07	2.9E-03
Tank Group 04	PB-881-07	VOC	Cumene	98-82-8	D	Y	1.05E-02		1.05E-02	NC	1.7E-04
Tank Group 04	PB-881-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		2.65E-02		NC	NC
Tank Group 04	PB-881-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		5.35E-02		NC	NC
Tank Group 04	PB-881-07	VOC	Ethyl Benzene	100-41-4	D	Y		5.35E-02	2.68E-02	NC	1.8E-04
Tank Group 04	PB-881-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.07E-01	5.35E-02	3.3E-08	1.2E-04
Tank Group 04	PB-881-07	VOC	Toluene	108-88-3	ID	Y		5.35E-02	2.68E-02	NC	3.5E-05
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-881-07	INORG	Lead	7439-92-1	B2	Y	1.48E+00		1.48E+00	NC	NC
Tank Group 04	PB-881-08	VOC	Benzene	71-43-2	A	Y		5.80E-04	2.90E-04	5.3E-09	6.3E-05
Tank Group 04	PB-881-08	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-881-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.80E-04		NC	NC
Tank Group 04	PB-881-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-881-08	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-881-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-881-08	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-881-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-881-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-881-08	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-881-08	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-08	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-08	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-881-08	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-08	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-881-08	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-08	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-881-08	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-881-08	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-08	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-08	INORG	Lead	7439-92-1	B2	Y	6.67E+00		6.67E+00	NC	NC
Tank Group 04	PB-881-09	VOC	Benzene	71-43-2	A	Y		5.80E-04	2.90E-04	5.3E-09	6.3E-05
Tank Group 04	PB-881-09	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-881-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.80E-04		NC	NC
Tank Group 04	PB-881-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-881-09	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-881-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-881-09	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-881-09	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-881-09	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-881-09	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-881-09	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-09	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-09	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-881-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-881-09	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-09	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-881-09	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-881-09	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-09	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-09	INORG	Lead	7439-92-1	B2	Y	6.12E+00		6.12E+00	NC	NC
Tank Group 04	PB-881-10	VOC	Benzene	71-43-2	A	Y		5.20E-02	2.60E-02	4.7E-07	5.7E-03
Tank Group 04	PB-881-10	VOC	Cumene	98-82-8	D	Y	2.60E-01		2.60E-01	NC	4.3E-03
Tank Group 04	PB-881-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-02		NC	NC
Tank Group 04	PB-881-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-01		NC	NC
Tank Group 04	PB-881-10	VOC	Ethyl Benzene	100-41-4	D	Y	6.70E-02		6.70E-02	NC	4.4E-04
Tank Group 04	PB-881-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-01	1.05E-01	6.4E-08	2.3E-04
Tank Group 04	PB-881-10	VOC	Toluene	108-88-3	ID	Y		1.00E-01	5.00E-02	NC	6.5E-05
Tank Group 04	PB-881-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	9.40E+00		9.40E+00	NC	1.0E+00
Tank Group 04	PB-881-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	3.60E+00		3.60E+00	NC	3.9E-01
Tank Group 04	PB-881-10	VOC	Xylenes (total)	1330-20-7	ID	Y	4.56E-01		4.56E-01	NC	3.0E-02
Tank Group 04	PB-881-10	SVOC	Anthracene	120-12-7	ID	Y		5.10E-01	2.55E-01	NC	NC
Tank Group 04	PB-881-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.70E-01		1.70E-01	NC	NC
Tank Group 04	PB-881-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		6.90E-01	3.45E-01	NC	NC
Tank Group 04	PB-881-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		5.10E-01	2.55E-01	NC	NC
Tank Group 04	PB-881-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		6.90E-01	3.45E-01	NC	NC
Tank Group 04	PB-881-10	SVOC	Chrysene	218-01-9	B2	Y	3.40E-01		3.40E-01	NC	NC
Tank Group 04	PB-881-10	SVOC	Fluorene	86-73-7	D	Y	1.10E+00		1.10E+00	NC	NC
Tank Group 04	PB-881-10	SVOC	Naphthalene	91-20-3	C	Y	4.40E+00		4.40E+00	3.0E-05	8.2E-01
Tank Group 04	PB-881-10	SVOC	Phenanthrene	85-01-8	D	Y	1.90E+00		1.90E+00	NC	NC
Tank Group 04	PB-881-10	SVOC	Pyrene	129-00-0	NC	Y	2.30E-01		2.30E-01	NC	NC
Tank Group 04	PB-881-10	INORG	Lead	7439-92-1	B2	Y	1.22E+00		1.22E+00	NC	NC
Tank Group 04	PB-881-11	VOC	Benzene	71-43-2	A	Y		5.30E-04	2.65E-04	4.8E-09	5.8E-05
Tank Group 04	PB-881-11	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-881-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.30E-04		NC	NC
Tank Group 04	PB-881-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-881-11	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-881-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-881-11	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-881-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-881-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-881-11	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-881-11	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-11	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-11	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-881-11	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-881-11	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-11	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-11	INORG	Lead	7439-92-1	B2	Y	2.35E+00		2.35E+00	NC	NC
Tank Group 04	PB-881-12	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-881-12	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-881-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-881-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-881-12	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-881-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-881-12	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-881-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-12	VOC	Xylenes (total)								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-881-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-13	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-13	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-881-13	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-881-13	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-13	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-13	INORG	Lead	7439-92-1	B2	Y	2.20E+00		2.20E+00	NC	NC
Tank Group 04	PB-881-14	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05
Tank Group 04	PB-881-14	VOC	Cumene	98-82-8	D	Y		9.00E-04	4.50E-04	NC	7.4E-06
Tank Group 04	PB-881-14	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-881-14	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.00E-04		NC	NC
Tank Group 04	PB-881-14	VOC	Ethyl Benzene	100-41-4	D	Y		9.00E-04	4.50E-04	NC	2.9E-06
Tank Group 04	PB-881-14	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-881-14	VOC	Toluene	108-88-3	ID	Y		9.00E-04	4.50E-04	NC	5.9E-07
Tank Group 04	PB-881-14	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-881-14	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-881-14	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-881-14	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-14	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-14	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-14	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-14	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-14	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-881-14	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-881-14	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-14	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-14	INORG	Lead	7439-92-1	B2	Y	2.02E+00		2.02E+00	NC	NC
Tank Group 04	PB-881-15	VOC	Benzene	71-43-2	A	Y		4.80E-04	2.40E-04	4.4E-09	5.2E-05
Tank Group 04	PB-881-15	VOC	Cumene	98-82-8	D	Y		9.60E-04	4.80E-04	NC	7.9E-06
Tank Group 04	PB-881-15	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC
Tank Group 04	PB-881-15	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.60E-04		NC	NC
Tank Group 04	PB-881-15	VOC	Ethyl Benzene	100-41-4	D	Y		9.60E-04	4.80E-04	NC	3.1E-06
Tank Group 04	PB-881-15	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	5.40E-04		5.40E-04	3.3E-10	1.2E-06
Tank Group 04	PB-881-15	VOC	Toluene	108-88-3	ID	Y		9.60E-04	4.80E-04	NC	6.3E-07
Tank Group 04	PB-881-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-881-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-881-15	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-881-15	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-881-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-881-15	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-15	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-881-15	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-881-15	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-15	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-15	INORG	Lead	7439-92-1	B2	Y	5.85E+00		5.85E+00	NC	NC
Tank Group 04	PB-881-16	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-881-16	VOC	Cumene	98-82-8	D	Y	1.70E-04		1.70E-04	NC	2.8E-06
Tank Group 04	PB-881-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-881-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-881-16	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-881-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-881-16	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-881-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-16	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-881-16	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-881-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-881-16	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-16	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-881-16	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-881-16	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-16	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-881-16	INORG	Lead	7439-92-1	B2	Y	1.07E+01		1.07E+01	NC	NC
Tank Group 04	PB-881-17	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-881-17	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-881-17	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-881-17	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-881-17	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-881-17	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-881-17	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-881-17	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-17	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-17	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-881-17	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-17	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-17	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-17	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-17	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-17	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-17	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-881-17	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-881-17	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-17	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-17	INORG	Lead	7439-92-1	B2	Y	1.40E+00		1.40E+00	NC	NC
Tank Group 04	PB-881-18	VOC	Benzene	71-43-2	A	Y		4.90E-04	2.45E-04	4.5E-09	5.3E-05
Tank Group 04	PB-881-18	VOC	Cumene	98-82-8	D	Y		9.80E-04	4.90E-04	NC	8.0E-06
Tank Group 04	PB-881-18	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.90E-04		NC	NC
Tank Group 04	PB-881-18	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.80E-04		NC	NC
Tank Group 04	PB-881-18	VOC	Ethyl Benzene	100-41-4	D	Y		9.80E-04	4.90E-04	NC	3.2E-06
Tank Group 04	PB-881-18	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-881-18	VOC	Toluene	108-88-3	ID	Y		9.80E-04	4.90E-04	NC	6.4E-07
Tank Group 04	PB-881-18	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-18	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-881-18	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-881-18	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-18	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-881-18	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-881-18	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-882-01	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-882-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-882-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-882-01	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-882-01	SVOC	Anthracene	120-12-7	ID	Y		7.80E-03	3.90E-03	NC	NC
Tank Group 04	PB-882-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.40E-03		1.40E-03	NC	NC
Tank Group 04	PB-882-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		7.80E-03	3.90E-03	NC	NC
Tank Group 04	PB-882-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	7.80E-04		7.80E-04	NC	NC
Tank Group 04	PB-882-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		7.80E-03	3.90E-03	NC	NC
Tank Group 04	PB-882-01	SVOC	Chrysene	218-01-9	B2	Y	6.60E-04		6.60E-04	NC	NC
Tank Group 04	PB-882-01	SVOC	Fluorene	86-73-7	D	Y		7.80E-03	3.90E-03	NC	NC
Tank Group 04	PB-882-01	SVOC	Naphthalene	91-20-3	C	Y		7.80E-03	3.90E-03	2.6E-08	7.3E-04
Tank Group 04	PB-882-01	SVOC	Phenanthrene	85-01-8	D	Y	9.30E-04		9.30E-04	NC	NC
Tank Group 04	PB-882-01	SVOC	Pyrene	129-00-0	NC	Y	1.40E-03		1.40E-03	NC	NC
Tank Group 04	PB-882-01	INORG	Lead	7439-92-1	B2	Y	4.20E+00		4.20E+00	NC	NC
Tank Group 04	PB-882-02	VOC	Benzene	71-43-2	A	Y		4.70E-04	2.35E-04	4.3E-09	5.1E-05
Tank Group 04	PB-882-02	VOC	Cumene	98-82-8	D	Y		9.50E-04	4.75E-04	NC	7.8E-06
Tank Group 04	PB-882-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.70E-04		NC	NC
Tank Group 04	PB-882-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.50E-04		NC	NC
Tank Group 04	PB-882-02	VOC	Ethyl Benzene	100-41-4	D	Y		9.50E-04	4.75E-04	NC	3.1E-06
Tank Group 04	PB-882-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-882-02	VOC	Toluene	108-88-3	ID	Y		9.50E-04	4.75E-04	NC	6.2E-07
Tank Group 04	PB-882-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-882-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-882-02	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-882-02	SVOC	Anthracene	120-12-7	ID	Y		7.20E-03	3.60E-03	NC	NC
Tank Group 04	PB-882-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	9.40E-04		9.40E-04	NC	NC
Tank Group 04	PB-882-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		7.20E-03	3.60E-03	NC	NC
Tank Group 04	PB-882-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		7.20E-03	3.60E-03	NC	NC
Tank Group 04	PB-882-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		7.20E-03	3.60E-03	NC	NC
Tank Group 04	PB-882-02	SVOC	Chrysene	218-01-9	B2	Y		7.20E-03	3.60E-03	NC	NC
Tank Group 04	PB-882-02	SVOC	Fluorene	86-73-7	D	Y		7.20E-03	3.60E-03	NC	NC
Tank Group 04	PB-882-02	SVOC	Naphthalene	91-20-3	C	Y		7.20E-03	3.60E-03	2.4E-08	6.7E-04
Tank Group 04	PB-882-02	SVOC	Phenanthrene	85-01-8	D	Y		7.20E-03	3.60E-03	NC	NC
Tank Group 04	PB-882-02	SVOC	Pyrene	129-00-0	NC	Y		7.20E-03	3.60E-03	NC	NC
Tank Group 04	PB-882-02	INORG	Lead	7439-92-1	B2	Y	5.30E+00		5.30E+00	NC	NC
Tank Group 04	PB-882-03	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05
Tank Group 04	PB-882-03	VOC	Cumene	98-82-8	D	Y		9.00E-04	4.50E-04	NC	7.4E-06
Tank Group 04	PB-882-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-882-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.00E-04		NC	NC
Tank Group 04	PB-882-03	VOC	Ethyl Benzene	100-41-4	D	Y		9.00E-04	4.50E-04	NC	2.9E-06
Tank Group 04	PB-882-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-882-03	VOC	Toluene	108-88-3	ID	Y		9.00E-04	4.50E-04	NC	5.9E-07
Tank Group 04	PB-882-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-882-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-882-03	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-882-03	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-882-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-882-03	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-03	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-882-03	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-882-03	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-03	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-03	INORG	Lead	7439-92-1	B2	Y	9.65E+00		9.65E+00	NC	NC
Tank Group 04	PB-882-04	VOC	Benzene	71-43-2	A	Y	5.80E-04		5.80E-04	1.1E-08	1.3E-04
Tank Group 04	PB-882-04	VOC	Cumene	98-82-8	D	Y		9.50E-04	4.75E-04	NC	7.8E-06
Tank Group 04	PB-882-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC
Tank Group 04	PB-882-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.50E-04		NC	NC
Tank Group 04	PB-882-04	VOC	Ethyl Benzene	100-41-4	D	Y	1.40E-04		1.40E-04	NC	9.2E-07
Tank Group 04	PB-882-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-882-04	VOC	Toluene	108-88-3	ID	Y		9.50E-04	4.75E-04	NC	6.2E-07
Tank Group 04	PB-882-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	9.60E-04		9.60E-04	NC	1.0E-04
Tank Group 04	PB-882-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	3.80E-04		3.80E-04	NC	4.1E-05
Tank Group 04	PB-882-04	VOC	Xylenes (total)	1330-20-7	ID	Y	1.08E-03		1.08E-03	NC	7.0E-05
Tank Group 04	PB-882-04	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-04	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-04	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-882-04	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-882-04	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-04	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-04	INORG	Lead	7439-92-1	B2	Y	6.10E+00		6.10E+00	NC	NC
Tank Group 04	PB-882-05	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-882-05	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-882-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-882-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-882-05	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-882-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-882-05	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-882-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-882-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-882-05	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-882-05	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-05	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-05	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-882-05	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-882-05	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-05	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-05	INORG	Lead	7439-92-1	B2	Y	5.09E+00		5.09E+00	NC	NC
Tank Group 04	PB-882-06	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05
Tank Group 04	PB-882-06	VOC	Cumene	98-82-8	D	Y		9.10E-04	4.55E-04	NC	7.4E-06
Tank Group 04	PB-882-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-882-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.10E-04		NC	NC
Tank Group 04	PB-882-06	VOC	Ethyl Benzene	100-41-4	D	Y		9.10E-04	4.55E-04	NC	3.0E-06
Tank Group 04	PB-882-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-882-06	VOC	Toluene	108-88-3	ID	Y		9.10E-04	4.55E-04	NC	6.0E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-882-06	INORG	Lead	7439-92-1	B2	Y	5.96E+00		5.96E+00	NC	NC
Tank Group 04	PB-882-07	VOC	Benzene	71-43-2	A	Y		4.60E-04	2.30E-04	4.2E-09	5.0E-05
Tank Group 04	PB-882-07	VOC	Cumene	98-82-8	D	Y		9.10E-04	4.55E-04	NC	7.4E-06
Tank Group 04	PB-882-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-882-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.10E-04		NC	NC
Tank Group 04	PB-882-07	VOC	Ethyl Benzene	100-41-4	D	Y		9.10E-04	4.55E-04	NC	3.0E-06
Tank Group 04	PB-882-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-882-07	VOC	Toluene	108-88-3	ID	Y		9.10E-04	4.55E-04	NC	6.0E-07
Tank Group 04	PB-882-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-882-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-882-07	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-882-07	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-07	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-07	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-882-07	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-882-07	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-07	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-07	INORG	Lead	7439-92-1	B2	Y	5.62E+00		5.62E+00	NC	NC
Tank Group 04	PB-882-08	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05
Tank Group 04	PB-882-08	VOC	Cumene	98-82-8	D	Y	3.90E-02		3.90E-02	NC	6.4E-04
Tank Group 04	PB-882-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-882-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.90E-04		NC	NC
Tank Group 04	PB-882-08	VOC	Ethyl Benzene	100-41-4	D	Y	1.70E-02		1.70E-02	NC	1.1E-04
Tank Group 04	PB-882-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-882-08	VOC	Toluene	108-88-3	ID	Y		8.90E-04	4.45E-04	NC	5.8E-07
Tank Group 04	PB-882-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	4.10E-02		4.10E-02	NC	4.5E-03
Tank Group 04	PB-882-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.60E-02		1.60E-02	NC	1.7E-03
Tank Group 04	PB-882-08	VOC	Xylenes (total)	1330-20-7	ID	Y	4.95E-03		4.95E-03	NC	3.2E-04
Tank Group 04	PB-882-08	SVOC	Anthracene	120-12-7	ID	Y	4.10E-02		4.10E-02	NC	NC
Tank Group 04	PB-882-08	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-08	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-08	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-08	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-08	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-08	SVOC	Fluorene	86-73-7	D	Y	4.00E-01		4.00E-01	NC	NC
Tank Group 04	PB-882-08	SVOC	Naphthalene	91-20-3	C	Y	1.60E+00		1.60E+00	1.1E-05	3.0E-01
Tank Group 04	PB-882-08	SVOC	Phenanthrene	85-01-8	D	Y	7.80E-01		7.80E-01	NC	NC
Tank Group 04	PB-882-08	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-08	INORG	Lead	7439-92-1	B2	Y	3.78E+00		3.78E+00	NC	NC
Tank Group 04	PB-882-09	VOC	Benzene	71-43-2	A	Y		5.40E-04	2.70E-04	4.9E-09	5.9E-05
Tank Group 04	PB-882-09	VOC	Cumene	98-82-8	D	Y	4.20E-02		4.20E-02	NC	6.9E-04
Tank Group 04	PB-882-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-882-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-882-09	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-882-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-882-09	VOC	Toluene	108-88-3	ID	Y	7.90E-04		7.90E-04	NC	1.0E-06
Tank Group 04	PB-882-09	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-882-09	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-882-09	VOC	Xylenes (total)	1330-20-7	ID	Y	2.50E-03		2.50E-03	NC	1.6E-04
Tank Group 04	PB-882-09	SVOC	Anthracene	120-12-7	ID	Y	7.60E-02		7.60E-02	NC	NC
Tank Group 04	PB-882-09	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.40E-02		2.40E-02	NC	NC
Tank Group 04	PB-882-09	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-882-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-882-09	SVOC	Chrysene	218-01-9	B2	Y	9.40E-02		9.40E-02	NC	NC
Tank Group 04	PB-882-09	SVOC	Fluorene	86-73-7	D	Y	9.90E-01		9.90E-01	NC	NC
Tank Group 04	PB-882-09	SVOC	Naphthalene	91-20-3	C	Y	6.00E-02		6.00E-02	4.1E-07	1.1E-02
Tank Group 04	PB-882-09	SVOC	Phenanthrene	85-01-8	D	Y	1.70E+00		1.70E+00	NC	NC
Tank Group 04	PB-882-09	SVOC	Pyrene	129-00-0	NC	Y	6.20E-02		6.20E-02	NC	NC
Tank Group 04	PB-882-09	INORG	Lead	7439-92-1	B2	Y	4.45E+00		4.45E+00	NC	NC
Tank Group 04	PB-882-10	VOC	Benzene	71-43-2	A	Y		9.50E-02	4.75E-02	8.7E-07	1.0E-02
Tank Group 04	PB-882-10	VOC	Cumene	98-82-8	D	Y	1.20E+00		1.20E+00	NC	2.0E-02
Tank Group 04	PB-882-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		9.50E-02		NC	NC
Tank Group 04	PB-882-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.90E-01		NC	NC
Tank Group 04	PB-882-10	VOC	Ethyl Benzene	100-41-4	D	Y		1.90E-01	9.50E-02	NC	6.2E-04
Tank Group 04	PB-882-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.80E-01	1.90E-01	1.2E-07	4.1E-04
Tank Group 04	PB-882-10	VOC	Toluene	108-88-3	ID	Y		1.90E-01	9.50E-02	NC	1.2E-04
Tank Group 04	PB-882-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.80E-01	1.90E-01	NC	2.1E-02
Tank Group 04	PB-882-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.80E-01	1.90E-01	NC	2.1E-02
Tank Group 04	PB-882-10	VOC	Xylenes (total)	1330-20-7	ID	Y		3.80E-01	1.90E-01	NC	1.2E-02
Tank Group 04	PB-882-10	SVOC	Anthracene	120-12-7	ID	Y	6.80E-02		6.80E-02	NC	NC
Tank Group 04	PB-882-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.20E-02		2.20E-02	NC	NC
Tank Group 04	PB-882-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.40E-02		1.40E-02	NC	NC
Tank Group 04	PB-882-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	2.80E-02		2.80E-02	NC	NC
Tank Group 04	PB-882-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	1.80E-02		1.80E-02	NC	NC
Tank Group 04	PB-882-10	SVOC	Chrysene	218-01-9	B2	Y	2.70E-01		2.70E-01	NC	NC
Tank Group 04	PB-882-10	SVOC	Fluorene	86-73-7	D	Y	5.70E-01		5.70E-01	NC	NC
Tank Group 04	PB-882-10	SVOC	Naphthalene	91-20-3	C	Y	1.60E-01		1.60E-01	1.1E-06	3.0E-02
Tank Group 04	PB-882-10	SVOC	Phenanthrene	85-01-8	D	Y	1.40E+00		1.40E+00	NC	NC
Tank Group 04	PB-882-10	SVOC	Pyrene	129-00-0	NC	Y	8.30E-02		8.30E-02	NC	NC
Tank Group 04	PB-882-10	INORG	Lead	7439-92-1	B2	Y		1.20E+01	6.00E+00	NC	NC
Tank Group 04	PB-882-11	VOC	Benzene	71-43-2	A	Y	3.20E-04		3.20E-04	5.8E-09	7.0E-05
Tank Group 04	PB-882-11	VOC	Cumene	98-82-8	D	Y	1.00E-04		1.00E-04	NC	1.6E-06
Tank Group 04	PB-882-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.30E-04		NC	NC
Tank Group 04	PB-882-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.70E-04		NC	NC
Tank Group 04	PB-882-11	VOC	Ethyl Benzene	100-41-4	D	Y		8.70E-04	4.35E-04	NC	2.8E-06
Tank Group 04	PB-882-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.60E-03		1.60E-03	9.7E-10	3.5E-06
Tank Group 04	PB-882-11	VOC	Toluene	108-88-3	ID	Y		8.70E-04	4.35E-04	NC	5.7E-07
Tank Group 04	PB-882-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-882-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-882-11	VOC	Xylenes (total)								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-882-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-12	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-12	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-882-12	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-882-12	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-12	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-882-12	INORG	Lead	7439-92-1	B2	Y	7.37E+00		7.37E+00	NC	NC
Tank Group 04	PB-882-13	VOC	Benzene	71-43-2	A	Y		4.60E-04	2.30E-04	4.2E-09	5.0E-05
Tank Group 04	PB-882-13	VOC	Cumene	98-82-8	D	Y		9.20E-04	4.60E-04	NC	7.5E-06
Tank Group 04	PB-882-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-882-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.20E-04		NC	NC
Tank Group 04	PB-882-13	VOC	Ethyl Benzene	100-41-4	D	Y		9.20E-04	4.60E-04	NC	3.0E-06
Tank Group 04	PB-882-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-882-13	VOC	Toluene	108-88-3	ID	Y		9.20E-04	4.60E-04	NC	6.0E-07
Tank Group 04	PB-882-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-882-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-882-13	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-882-13	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-13	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-13	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-882-13	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-13	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-882-13	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-882-13	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-13	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-882-13	INORG	Lead	7439-92-1	B2	Y	5.83E+00		5.83E+00	NC	NC
Tank Group 04	PB-882-14	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-882-14	VOC	Cumene	98-82-8	D	Y	3.10E-03		3.10E-03	NC	5.1E-05
Tank Group 04	PB-882-14	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-882-14	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-882-14	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-882-14	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-882-14	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-882-14	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	7.70E-03		7.70E-03	NC	8.4E-04
Tank Group 04	PB-882-14	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	5.00E-03		5.00E-03	NC	5.5E-04
Tank Group 04	PB-882-14	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-882-14	SVOC	Anthracene	120-12-7	ID	Y		1.60E-02	8.00E-03	NC	NC
Tank Group 04	PB-882-14	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.50E-02		3.50E-02	NC	NC
Tank Group 04	PB-882-14	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.80E-02		1.80E-02	NC	NC
Tank Group 04	PB-882-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	2.00E-02		2.00E-02	NC	NC
Tank Group 04	PB-882-14	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	9.70E-03		9.70E-03	NC	NC
Tank Group 04	PB-882-14	SVOC	Chrysene	218-01-9	B2	Y	1.60E-01		1.60E-01	NC	NC
Tank Group 04	PB-882-14	SVOC	Fluorene	86-73-7	D	Y	2.90E-01		2.90E-01	NC	NC
Tank Group 04	PB-882-14	SVOC	Naphthalene	91-20-3	C	Y	1.30E-01		1.30E-01	8.8E-07	2.4E-02
Tank Group 04	PB-882-14	SVOC	Phenanthrene	85-01-8	D	Y	8.40E-01		8.40E-01	NC	NC
Tank Group 04	PB-882-14	SVOC	Pyrene	129-00-0	NC	Y	5.00E-02		5.00E-02	NC	NC
Tank Group 04	PB-882-14	INORG	Lead	7439-92-1	B2	Y	7.00E+00		7.00E+00	NC	NC
Tank Group 04	PB-882-15	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-882-15	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-882-15	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-882-15	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-882-15	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-882-15	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-882-15	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-882-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-882-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-882-15	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-882-15	SVOC	Anthracene	120-12-7	ID	Y	2.40E-02		2.40E-02	NC	NC
Tank Group 04	PB-882-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.00E-02		3.00E-02	NC	NC
Tank Group 04	PB-882-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.90E-02		1.90E-02	NC	NC
Tank Group 04	PB-882-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	2.40E-02		2.40E-02	NC	NC
Tank Group 04	PB-882-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	7.60E-03		7.60E-03	NC	NC
Tank Group 04	PB-882-15	SVOC	Chrysene	218-01-9	B2	Y	2.30E-02		2.30E-02	NC	NC
Tank Group 04	PB-882-15	SVOC	Fluorene	86-73-7	D	Y	1.50E-02		1.50E-02	NC	NC
Tank Group 04	PB-882-15	SVOC	Naphthalene	91-20-3	C	Y	9.40E-03		9.40E-03	6.4E-08	1.7E-03
Tank Group 04	PB-882-15	SVOC	Phenanthrene	85-01-8	D	Y	7.90E-02		7.90E-02	NC	NC
Tank Group 04	PB-882-15	SVOC	Pyrene	129-00-0	NC	Y	4.70E-02		4.70E-02	NC	NC
Tank Group 04	PB-882-15	INORG	Lead	7439-92-1	B2	Y	1.94E+01		1.94E+01	NC	NC
Tank Group 04	PB-882-16	VOC	Benzene	71-43-2	A	Y		5.00E-02	2.50E-02	4.6E-07	5.5E-03
Tank Group 04	PB-882-16	VOC	Cumene	98-82-8	D	Y	6.40E+00		6.40E+00	NC	1.0E-01
Tank Group 04	PB-882-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-02		NC	NC
Tank Group 04	PB-882-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-01		NC	NC
Tank Group 04	PB-882-16	VOC	Ethyl Benzene	100-41-4	D	Y	1.70E+01		1.70E+01	NC	1.1E-01
Tank Group 04	PB-882-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-01	1.00E-01	6.1E-08	2.2E-04
Tank Group 04	PB-882-16	VOC	Toluene	108-88-3	ID	Y		1.00E-01	5.00E-02	NC	6.5E-05
Tank Group 04	PB-882-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	6.40E+01		6.40E+01	NC	7.0E+00
Tank Group 04	PB-882-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.80E+01		1.80E+01	NC	2.0E+00
Tank Group 04	PB-882-16	VOC	Xylenes (total)	1330-20-7	ID	Y	3.92E+01		3.92E+01	NC	2.6E+00
Tank Group 04	PB-882-16	SVOC	Anthracene	120-12-7	ID	Y		7.70E-02	3.85E-02	NC	NC
Tank Group 04	PB-882-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	7.00E-02		7.00E-02	NC	NC
Tank Group 04	PB-882-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	3.60E-02		3.60E-02	NC	NC
Tank Group 04	PB-882-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	4.70E-02		4.70E-02	NC	NC
Tank Group 04	PB-882-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	3.50E-02		3.50E-02	NC	NC
Tank Group 04	PB-882-16	SVOC	Chrysene	218-01-9	B2	Y	4.40E-01		4.40E-01	NC	NC
Tank Group 04	PB-882-16	SVOC	Fluorene	86-73-7	D	Y	7.80E-01		7.80E-01	NC	NC
Tank Group 04	PB-882-16	SVOC	Naphthalene	91-20-3	C	Y	4.20E+00		4.20E+00	2.8E-05	7.8E-01
Tank Group 04	PB-882-16	SVOC	Phenanthrene	85-01-8	D	Y	2.30E+00		2.30E+00	NC	NC
Tank Group 04	PB-882-16	SVOC	Pyrene	129-00-0	NC	Y	1.60E-01		1.60E-01	NC	NC
Tank Group 04	PB-882-16	INORG	Lead	7439-92-1	B2	Y	1.13E+01		1.13E+01	NC	NC
Tank Group 04	PB-882-17	VOC	Benzene	71-43-2	A	Y		5.40E-04	2.70E-04	4.9E-09	5.9E-05
Tank Group 04	PB-882-17	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-882-17	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-882-17	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-882-17	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-882-17	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-882-17	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-882-17	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-882-17	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-882-17	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-882-17	SVOC	Anthracene	120-12-7	ID	Y		1.40E-02	7.00E-03	NC	NC
Tank Group 04	PB-882-17	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	6.90E-03		6.90E-03	NC	NC
Tank Group 04	PB-882-17	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	2.00E-03		2.00E-03	NC	NC
Tank Group 04	PB-882-17	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	4.80E-03		4.80E-03	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-882-18	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-882-18	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-882-18	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-882-18	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-882-18	SVOC	Anthracene	120-12-7	ID	Y	7.50E-04		7.50E-04	NC	NC
Tank Group 04	PB-882-18	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		7.90E-03	3.95E-03	NC	NC
Tank Group 04	PB-882-18	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		7.90E-03	3.95E-03	NC	NC
Tank Group 04	PB-882-18	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		7.90E-03	3.95E-03	NC	NC
Tank Group 04	PB-882-18	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		7.90E-03	3.95E-03	NC	NC
Tank Group 04	PB-882-18	SVOC	Chrysene	218-01-9	B2	Y		7.90E-03	3.95E-03	NC	NC
Tank Group 04	PB-882-18	SVOC	Fluorene	86-73-7	D	Y		7.90E-03	3.95E-03	NC	NC
Tank Group 04	PB-882-18	SVOC	Naphthalene	91-20-3	C	Y		7.90E-03	3.95E-03	2.7E-08	7.4E-04
Tank Group 04	PB-882-18	SVOC	Phenanthrene	85-01-8	D	Y	4.10E-03		4.10E-03	NC	NC
Tank Group 04	PB-882-18	SVOC	Pyrene	129-00-0	NC	Y	2.00E-03		2.00E-03	NC	NC
Tank Group 04	PB-882-18	INORG	Lead	7439-92-1	B2	Y	1.13E+01		1.13E+01	NC	NC
Tank Group 04	PB-882-19	VOC	Benzene	71-43-2	A	Y		5.50E-04	2.75E-04	5.0E-09	6.0E-05
Tank Group 04	PB-882-19	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-882-19	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.50E-04		NC	NC
Tank Group 04	PB-882-19	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-882-19	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-882-19	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-882-19	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-882-19	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-882-19	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-882-19	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-882-19	SVOC	Anthracene	120-12-7	ID	Y		8.20E-03	4.10E-03	NC	NC
Tank Group 04	PB-882-19	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		8.20E-03	4.10E-03	NC	NC
Tank Group 04	PB-882-19	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		8.20E-03	4.10E-03	NC	NC
Tank Group 04	PB-882-19	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		8.20E-03	4.10E-03	NC	NC
Tank Group 04	PB-882-19	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		8.20E-03	4.10E-03	NC	NC
Tank Group 04	PB-882-19	SVOC	Chrysene	218-01-9	B2	Y		8.20E-03	4.10E-03	NC	NC
Tank Group 04	PB-882-19	SVOC	Fluorene	86-73-7	D	Y		8.20E-03	4.10E-03	NC	NC
Tank Group 04	PB-882-19	SVOC	Naphthalene	91-20-3	C	Y		8.20E-03	4.10E-03	2.8E-08	7.6E-04
Tank Group 04	PB-882-19	SVOC	Phenanthrene	85-01-8	D	Y	1.40E-03		1.40E-03	NC	NC
Tank Group 04	PB-882-19	SVOC	Pyrene	129-00-0	NC	Y		8.20E-03	4.10E-03	NC	NC
Tank Group 04	PB-882-19	INORG	Lead	7439-92-1	B2	Y	1.00E+01		1.00E+01	NC	NC
Tank Group 04	PB-882-20	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-882-20	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-882-20	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-882-20	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-882-20	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-882-20	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-882-20	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-882-20	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-882-20	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-882-20	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-882-20	SVOC	Anthracene	120-12-7	ID	Y		1.60E-02	8.00E-03	NC	NC
Tank Group 04	PB-882-20	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	7.60E-02		7.60E-02	NC	NC
Tank Group 04	PB-882-20	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	4.00E-02		4.00E-02	NC	NC
Tank Group 04	PB-882-20	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	7.40E-02		7.40E-02	NC	NC
Tank Group 04	PB-882-20	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	3.80E-02		3.80E-02	NC	NC
Tank Group 04	PB-882-20	SVOC	Chrysene	218-01-9	B2	Y	4.20E-01		4.20E-01	NC	NC
Tank Group 04	PB-882-20	SVOC	Fluorene	86-73-7	D	Y	4.60E-01		4.60E-01	NC	NC
Tank Group 04	PB-882-20	SVOC	Naphthalene	91-20-3	C	Y	6.20E-02		6.20E-02	4.2E-07	1.2E-02
Tank Group 04	PB-882-20	SVOC	Phenanthrene	85-01-8	D	Y	1.20E+00		1.20E+00	NC	NC
Tank Group 04	PB-882-20	SVOC	Pyrene	129-00-0	NC	Y	1.40E-01		1.40E-01	NC	NC
Tank Group 04	PB-882-20	INORG	Lead	7439-92-1	B2	Y	7.36E+01		7.36E+01	NC	NC
Tank Group 04	PB-883-01	VOC	Benzene	71-43-2	A	Y	2.60E-04		2.60E-04	4.7E-09	5.7E-05
Tank Group 04	PB-883-01	VOC	Cumene	98-82-8	D	Y	1.80E-04		1.80E-04	NC	2.9E-06
Tank Group 04	PB-883-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-04		NC	NC
Tank Group 04	PB-883-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-883-01	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-883-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	3.20E-04		3.20E-04	1.9E-10	7.0E-07
Tank Group 04	PB-883-01	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-883-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-883-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-883-01	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-883-01	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-01	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-01	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-883-01	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-883-01	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-01	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-01	INORG	Lead	7439-92-1	B2	Y	7.61E+00		7.61E+00	NC	NC
Tank Group 04	PB-883-02	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-883-02	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-883-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-883-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-883-02	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-883-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.80E-03		1.80E-03	1.1E-09	3.9E-06
Tank Group 04	PB-883-02	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-883-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-883-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-883-02	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-883-02	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-02	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-02	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-883-02	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-883-02	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-02	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-02	INORG	Lead	7439-92-1	B2	Y	6.88E+00		6.88E+00	NC	NC
Tank Group 04	PB-883-03	VOC	Benzene	71-43-2	A	Y	4.10E-04		4.10E-04	7.5E-09	9.0E-05
Tank Group 04	PB-883-03	VOC	Cumene	98-82-8	D	Y		8.20E-04	4.10E-04	NC	6.7E-06
Tank Group 04	PB-883-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.10E-04		NC	NC
Tank Group 04	PB-883-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.20E-04		NC	NC
Tank Group 04	PB-883-03	VOC	Ethyl Benzene	100-41-4	D	Y		8.20E-04	4.10E-04	NC	2.7E-06
Tank Group 04	PB-883-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	2.00E-03		2.00E-03	1.2E-09	4.4E-06
Tank Group 04	PB-883-03	VOC	Toluene	108-88-3	ID	Y		8.20E-04	4.10E-04	NC	5.4E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-883-03	INORG	Lead	7439-92-1	B2	Y	5.82E+00		5.82E+00	NC	NC
Tank Group 04	PB-883-04	VOC	Benzene	71-43-2	A	Y		4.90E-04	2.45E-04	4.5E-09	5.3E-05
Tank Group 04	PB-883-04	VOC	Cumene	98-82-8	D	Y		9.80E-04	4.90E-04	NC	8.0E-06
Tank Group 04	PB-883-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.90E-04		NC	NC
Tank Group 04	PB-883-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.80E-04		NC	NC
Tank Group 04	PB-883-04	VOC	Ethyl Benzene	100-41-4	D	Y		9.80E-04	4.90E-04	NC	3.2E-06
Tank Group 04	PB-883-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-883-04	VOC	Toluene	108-88-3	ID	Y		9.80E-04	4.90E-04	NC	6.4E-07
Tank Group 04	PB-883-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-883-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-883-04	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-883-04	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-04	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-04	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-883-04	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-883-04	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-04	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-04	INORG	Lead	7439-92-1	B2	Y	6.16E+00		6.16E+00	NC	NC
Tank Group 04	PB-883-05	VOC	Benzene	71-43-2	A	Y	3.00E-04		3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-883-05	VOC	Cumene	98-82-8	D	Y	2.00E-04		2.00E-04	NC	3.3E-06
Tank Group 04	PB-883-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-883-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.10E-04		NC	NC
Tank Group 04	PB-883-05	VOC	Ethyl Benzene	100-41-4	D	Y		9.10E-04	4.55E-04	NC	3.0E-06
Tank Group 04	PB-883-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	4.20E-03		4.20E-03	2.6E-09	9.2E-06
Tank Group 04	PB-883-05	VOC	Toluene	108-88-3	ID	Y		9.10E-04	4.55E-04	NC	6.0E-07
Tank Group 04	PB-883-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	3.40E-04		3.40E-04	NC	3.7E-05
Tank Group 04	PB-883-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	8.40E-04		8.40E-04	NC	9.2E-05
Tank Group 04	PB-883-05	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-883-05	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-05	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-05	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-883-05	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-883-05	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-05	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-05	INORG	Lead	7439-92-1	B2	Y	6.72E+00		6.72E+00	NC	NC
Tank Group 04	PB-883-06	VOC	Benzene	71-43-2	A	Y		5.30E-04	2.65E-04	4.8E-09	5.8E-05
Tank Group 04	PB-883-06	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-883-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.30E-04		NC	NC
Tank Group 04	PB-883-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-883-06	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-883-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	4.80E-04		4.80E-04	2.9E-10	1.0E-06
Tank Group 04	PB-883-06	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-883-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-883-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-883-06	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-883-06	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-06	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-06	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-883-06	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-883-06	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-06	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-06	INORG	Lead	7439-92-1	B2	Y	6.14E+00		6.14E+00	NC	NC
Tank Group 04	PB-883-07	VOC	Benzene	71-43-2	A	Y	2.60E-04		2.60E-04	4.7E-09	5.7E-05
Tank Group 04	PB-883-07	VOC	Cumene	98-82-8	D	Y	2.10E-04		2.10E-04	NC	3.4E-06
Tank Group 04	PB-883-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.60E-04		NC	NC
Tank Group 04	PB-883-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-883-07	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-883-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.60E-03		1.60E-03	9.7E-10	3.5E-06
Tank Group 04	PB-883-07	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-883-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	4.10E-04		4.10E-04	NC	4.5E-05
Tank Group 04	PB-883-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.50E-04		2.50E-04	NC	2.7E-05
Tank Group 04	PB-883-07	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-883-07	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-07	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-07	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-883-07	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-883-07	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-07	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-07	INORG	Lead	7439-92-1	B2	Y	1.39E+01		1.39E+01	NC	NC
Tank Group 04	PB-883-08	VOC	Benzene	71-43-2	A	Y		5.40E-04	2.70E-04	4.9E-09	5.9E-05
Tank Group 04	PB-883-08	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-883-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-883-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-883-08	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-883-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-883-08	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-883-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-883-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-883-08	VOC	Xylenes (total)								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-883-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-883-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-883-09	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-883-09	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-883-09	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-883-09	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-883-09	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-883-09	INORG	Lead	7439-92-1	B2	Y	2.18E+00		2.18E+00	NC	NC
Tank Group 04	PB-883-10	VOC	Benzene	71-43-2	A	Y		4.40E-04	2.20E-04	4.0E-09	4.8E-05
Tank Group 04	PB-883-10	VOC	Cumene	98-82-8	D	Y		8.90E-04	4.45E-04	NC	7.3E-06
Tank Group 04	PB-883-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.40E-04		NC	NC
Tank Group 04	PB-883-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.90E-04		NC	NC
Tank Group 04	PB-883-10	VOC	Ethyl Benzene	100-41-4	D	Y		8.90E-04	4.45E-04	NC	2.9E-06
Tank Group 04	PB-883-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-883-10	VOC	Toluene	108-88-3	ID	Y		8.90E-04	4.45E-04	NC	5.8E-07
Tank Group 04	PB-883-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-883-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-883-10	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-883-10	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-883-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-883-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-883-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-10	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-883-10	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-883-10	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-883-10	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-883-10	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-883-10	INORG	Lead	7439-92-1	B2	Y	4.67E+00		4.67E+00	NC	NC
Tank Group 04	PB-883-11	VOC	Benzene	71-43-2	A	Y		4.80E-04	2.40E-04	4.4E-09	5.2E-05
Tank Group 04	PB-883-11	VOC	Cumene	98-82-8	D	Y		9.50E-04	4.75E-04	NC	7.8E-06
Tank Group 04	PB-883-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC
Tank Group 04	PB-883-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.50E-04		NC	NC
Tank Group 04	PB-883-11	VOC	Ethyl Benzene	100-41-4	D	Y		9.50E-04	4.75E-04	NC	3.1E-06
Tank Group 04	PB-883-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-883-11	VOC	Toluene	108-88-3	ID	Y		9.50E-04	4.75E-04	NC	6.2E-07
Tank Group 04	PB-883-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-883-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-883-11	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-883-11	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-11	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-11	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-883-11	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-883-11	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-11	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-11	INORG	Lead	7439-92-1	B2	Y	4.25E+00		4.25E+00	NC	NC
Tank Group 04	PB-883-12	VOC	Benzene	71-43-2	A	Y		5.70E-04	2.85E-04	5.2E-09	6.2E-05
Tank Group 04	PB-883-12	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-883-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.70E-04		NC	NC
Tank Group 04	PB-883-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-883-12	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-883-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-883-12	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-883-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-883-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-883-12	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-883-12	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-12	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-12	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-883-12	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-883-12	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-12	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-12	INORG	Lead	7439-92-1	B2	Y	1.10E+01		1.10E+01	NC	NC
Tank Group 04	PB-883-13	VOC	Benzene	71-43-2	A	Y		4.80E-04	2.40E-04	4.4E-09	5.2E-05
Tank Group 04	PB-883-13	VOC	Cumene	98-82-8	D	Y		9.60E-04	4.80E-04	NC	7.9E-06
Tank Group 04	PB-883-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC
Tank Group 04	PB-883-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.60E-04		NC	NC
Tank Group 04	PB-883-13	VOC	Ethyl Benzene	100-41-4	D	Y		9.60E-04	4.80E-04	NC	3.1E-06
Tank Group 04	PB-883-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-883-13	VOC	Toluene	108-88-3	ID	Y		9.60E-04	4.80E-04	NC	6.3E-07
Tank Group 04	PB-883-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-883-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-883-13	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-883-13	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-13	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-13	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-13	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-13	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-883-13	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-883-13	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-13	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-13	INORG	Lead	7439-92-1	B2	Y	6.72E+00		6.72E+00	NC	NC
Tank Group 04	PB-883-14	VOC	Benzene	71-43-2	A	Y		6.20E-04	3.10E-04	5.7E-09	6.8E-05
Tank Group 04	PB-883-14	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-883-14	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.20E-04		NC	NC
Tank Group 04	PB-883-14	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-883-14	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-883-14	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.50E-03	1.25E-03	7.6E-10	2.7E-06
Tank Group 04	PB-883-14	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-883-14	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.50E-03	1.25E-03	NC	1.4E-04
Tank Group 04	PB-883-14	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.50E-03	1.25E-03	NC	1.4E-04
Tank Group 04	PB-883-14	VOC	Xylenes (total)	1330-20-7	ID	Y		2.50E-03	1.25E-03	NC	8.2E-05
Tank Group 04	PB-883-14	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-14	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-14	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-883-15	VOC	Toluene	108-88-3	ID	Y		9.50E-04	4.75E-04	NC	6.2E-07
Tank Group 04	PB-883-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-883-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-883-15	VOC	Xylenes (total)	1330-20-7	ID	Y	1.25E-03		1.25E-03	NC	8.2E-05
Tank Group 04	PB-883-15	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-15	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-15	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-883-15	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-883-15	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-15	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-15	INORG	Lead	7439-92-1	B2	Y	8.06E+00		8.06E+00	NC	NC
Tank Group 04	PB-883-16	VOC	Benzene	71-43-2	A	Y		5.60E-04	2.80E-04	5.1E-09	6.1E-05
Tank Group 04	PB-883-16	VOC	Cumene	98-82-8	D	Y	1.90E-04		1.90E-04	NC	3.1E-06
Tank Group 04	PB-883-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.60E-04		NC	NC
Tank Group 04	PB-883-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-883-16	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-883-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-883-16	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-883-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-883-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-883-16	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-883-16	SVOC	Anthracene	120-12-7	ID	Y		5.90E-01	2.95E-01	NC	NC
Tank Group 04	PB-883-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		5.90E-01	2.95E-01	NC	NC
Tank Group 04	PB-883-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		7.90E-01	3.95E-01	NC	NC
Tank Group 04	PB-883-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		5.90E-01	2.95E-01	NC	NC
Tank Group 04	PB-883-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		7.90E-01	3.95E-01	NC	NC
Tank Group 04	PB-883-16	SVOC	Chrysene	218-01-9	B2	Y	4.30E-01		4.30E-01	NC	NC
Tank Group 04	PB-883-16	SVOC	Fluorene	86-73-7	D	Y		9.90E-01	4.95E-01	NC	NC
Tank Group 04	PB-883-16	SVOC	Naphthalene	91-20-3	C	Y		9.90E-01	4.95E-01	3.4E-06	9.2E-02
Tank Group 04	PB-883-16	SVOC	Phenanthrene	85-01-8	D	Y		5.90E-01	2.95E-01	NC	NC
Tank Group 04	PB-883-16	SVOC	Pyrene	129-00-0	NC	Y	3.60E-01		3.60E-01	NC	NC
Tank Group 04	PB-883-16	INORG	Lead	7439-92-1	B2	Y	8.62E+00		8.62E+00	NC	NC
Tank Group 04	PB-883-17	VOC	Benzene	71-43-2	A	Y		6.40E-04	3.20E-04	5.8E-09	7.0E-05
Tank Group 04	PB-883-17	VOC	Cumene	98-82-8	D	Y		1.30E-03	6.50E-04	NC	1.1E-05
Tank Group 04	PB-883-17	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.40E-04		NC	NC
Tank Group 04	PB-883-17	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-883-17	VOC	Ethyl Benzene	100-41-4	D	Y		1.30E-03	6.50E-04	NC	4.3E-06
Tank Group 04	PB-883-17	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.60E-03	1.30E-03	7.9E-10	2.8E-06
Tank Group 04	PB-883-17	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank Group 04	PB-883-17	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.60E-03	1.30E-03	NC	1.4E-04
Tank Group 04	PB-883-17	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.60E-03	1.30E-03	NC	1.4E-04
Tank Group 04	PB-883-17	VOC	Xylenes (total)	1330-20-7	ID	Y		2.60E-03	1.30E-03	NC	8.5E-05
Tank Group 04	PB-883-17	SVOC	Anthracene	120-12-7	ID	Y		5.40E-01	2.70E-01	NC	NC
Tank Group 04	PB-883-17	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.30E-01		1.30E-01	NC	NC
Tank Group 04	PB-883-17	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		7.20E-01	3.60E-01	NC	NC
Tank Group 04	PB-883-17	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		5.40E-01	2.70E-01	NC	NC
Tank Group 04	PB-883-17	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		7.20E-01	3.60E-01	NC	NC
Tank Group 04	PB-883-17	SVOC	Chrysene	218-01-9	B2	Y	3.60E-01		3.60E-01	NC	NC
Tank Group 04	PB-883-17	SVOC	Fluorene	86-73-7	D	Y	2.90E-01		2.90E-01	NC	NC
Tank Group 04	PB-883-17	SVOC	Naphthalene	91-20-3	C	Y		9.00E-01	4.50E-01	3.1E-06	8.4E-02
Tank Group 04	PB-883-17	SVOC	Phenanthrene	85-01-8	D	Y	4.30E-01		4.30E-01	NC	NC
Tank Group 04	PB-883-17	SVOC	Pyrene	129-00-0	NC	Y	2.00E-01		2.00E-01	NC	NC
Tank Group 04	PB-883-17	INORG	Lead	7439-92-1	B2	Y	7.06E+00		7.06E+00	NC	NC
Tank Group 04	PB-883-18	VOC	Benzene	71-43-2	A	Y		3.20E-02	1.60E-02	2.9E-07	3.5E-03
Tank Group 04	PB-883-18	VOC	Cumene	98-82-8	D	Y	8.20E-01		8.20E-01	NC	1.3E-02
Tank Group 04	PB-883-18	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.20E-02		NC	NC
Tank Group 04	PB-883-18	VOC	1,2-Dichloroethane	107-06-2	B2	N		6.40E-02		NC	NC
Tank Group 04	PB-883-18	VOC	Ethyl Benzene	100-41-4	D	Y		6.40E-02	3.20E-02	NC	2.1E-04
Tank Group 04	PB-883-18	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.30E-01	6.50E-02	4.0E-08	1.4E-04
Tank Group 04	PB-883-18	VOC	Toluene	108-88-3	ID	Y		6.40E-02	3.20E-02	NC	4.2E-05
Tank Group 04	PB-883-18	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	4.00E-02		4.00E-02	NC	4.4E-03
Tank Group 04	PB-883-18	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.30E-01	6.50E-02	NC	7.1E-03
Tank Group 04	PB-883-18	VOC	Xylenes (total)	1330-20-7	ID	Y	1.09E-01		1.09E-01	NC	7.1E-03
Tank Group 04	PB-883-18	SVOC	Anthracene	120-12-7	ID	Y		5.40E-01	2.70E-01	NC	NC
Tank Group 04	PB-883-18	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		5.40E-01	2.70E-01	NC	NC
Tank Group 04	PB-883-18	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		7.20E-01	3.60E-01	NC	NC
Tank Group 04	PB-883-18	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		5.40E-01	2.70E-01	NC	NC
Tank Group 04	PB-883-18	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		7.20E-01	3.60E-01	NC	NC
Tank Group 04	PB-883-18	SVOC	Chrysene	218-01-9	B2	Y	3.70E-01		3.70E-01	NC	NC
Tank Group 04	PB-883-18	SVOC	Fluorene	86-73-7	D	Y	2.50E-01		2.50E-01	NC	NC
Tank Group 04	PB-883-18	SVOC	Naphthalene	91-20-3	C	Y		9.10E-01	4.55E-01	3.1E-06	8.5E-02
Tank Group 04	PB-883-18	SVOC	Phenanthrene	85-01-8	D	Y	5.20E-01		5.20E-01	NC	NC
Tank Group 04	PB-883-18	SVOC	Pyrene	129-00-0	NC	Y	1.90E-01		1.90E-01	NC	NC
Tank Group 04	PB-883-18	INORG	Lead	7439-92-1	B2	Y	6.49E+00		6.49E+00	NC	NC
Tank Group 04	PB-883-19	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-883-19	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-883-19	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-883-19	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-883-19	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-883-19	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-883-19	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-883-19	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-883-19	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-883-19	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-883-19	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-883-19	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-883-19	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-883-19	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-883-19	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-883-19	SVOC	Chrysene	218-01-9	B2	Y	2.70E-02		2.70E-02	NC	NC
Tank Group 04	PB-883-19	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-883-19	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-883-19	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-883-19	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-883-19	INORG	Lead	7439-92-1	B2	Y	7.75E+00		7.75E+00	NC	NC
Tank Group 04	PB-883-20	VOC	Benzene	71-43-2	A	Y	4.50E-04		4.50E-04	8.2E-09	9.8E-05
Tank Group 04	PB-883-20	VOC	Cumene	98-82-8	D	Y	2.90E-04		2.90E-04	NC	4.7E-06
Tank Group 04	PB-883-20	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC
Tank Group 04	PB-883-20	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.70E-04		NC	NC
Tank Group 04	PB-883-20	VOC	Ethyl Benzene	100-41-4	D	Y		9.70E-04	4.85E-04	NC	3.2E-06
Tank Group 04	PB-883-20	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	5.10E-03		5.10E-03	3.1E-09	1.1E-05
Tank Group 04	PB-883-20	VOC	Toluene	108-88-3	ID	Y		9.70E-04	4.85E-04	NC	6.4E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-883-20	INORG	Lead	7439-92-1	B2	Y	7.73E+00		7.73E+00	NC	NC
Tank Group 04	PB-883-21	VOC	Benzene	71-43-2	A	Y		4.60E-04	2.30E-04	4.2E-09	5.0E-05
Tank Group 04	PB-883-21	VOC	Cumene	98-82-8	D	Y	4.20E-04		4.20E-04	NC	6.9E-06
Tank Group 04	PB-883-21	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-883-21	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.10E-04		NC	NC
Tank Group 04	PB-883-21	VOC	Ethyl Benzene	100-41-4	D	Y	3.40E-04		3.40E-04	NC	2.2E-06
Tank Group 04	PB-883-21	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-883-21	VOC	Toluene	108-88-3	ID	Y		9.10E-04	4.55E-04	NC	6.0E-07
Tank Group 04	PB-883-21	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	9.70E-03		9.70E-03	NC	1.1E-03
Tank Group 04	PB-883-21	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	3.20E-03		3.20E-03	NC	3.5E-04
Tank Group 04	PB-883-21	VOC	Xylenes (total)	1330-20-7	ID	Y	2.30E-03		2.30E-03	NC	1.5E-04
Tank Group 04	PB-883-21	SVOC	Anthracene	120-12-7	ID	Y	7.40E-01		7.40E-01	NC	NC
Tank Group 04	PB-883-21	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-883-21	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-21	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-883-21	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-21	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-883-21	SVOC	Fluorene	86-73-7	D	Y	1.20E+00		1.20E+00	NC	NC
Tank Group 04	PB-883-21	SVOC	Naphthalene	91-20-3	C	Y	3.00E+00		3.00E+00	2.0E-05	5.6E-01
Tank Group 04	PB-883-21	SVOC	Phenanthrene	85-01-8	D	Y	3.70E+00		3.70E+00	NC	NC
Tank Group 04	PB-883-21	SVOC	Pyrene	129-00-0	NC	Y	2.30E-01		2.30E-01	NC	NC
Tank Group 04	PB-883-21	INORG	Lead	7439-92-1	B2	Y	1.26E+01		1.26E+01	NC	NC
Tank Group 04	PB-883-22	VOC	Benzene	71-43-2	A	Y		5.20E-04	2.60E-04	4.7E-09	5.7E-05
Tank Group 04	PB-883-22	VOC	Cumene	98-82-8	D	Y	2.40E-04		2.40E-04	NC	3.9E-06
Tank Group 04	PB-883-22	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-04		NC	NC
Tank Group 04	PB-883-22	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-883-22	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-883-22	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-883-22	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-883-22	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-883-22	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-883-22	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-883-22	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-22	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-22	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-22	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-22	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-883-22	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-22	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-883-22	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-883-22	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-22	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-22	INORG	Lead	7439-92-1	B2	Y	4.03E+00		4.03E+00	NC	NC
Tank Group 04	PB-883-23	VOC	Benzene	71-43-2	A	Y		7.40E-04	3.70E-04	6.8E-09	8.1E-05
Tank Group 04	PB-883-23	VOC	Cumene	98-82-8	D	Y		1.50E-03	7.50E-04	NC	1.2E-05
Tank Group 04	PB-883-23	VOC	1,2-Dibromoethane	106-93-4	LC	N		7.40E-04		NC	NC
Tank Group 04	PB-883-23	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.50E-03		NC	NC
Tank Group 04	PB-883-23	VOC	Ethyl Benzene	100-41-4	D	Y		1.50E-03	7.50E-04	NC	4.9E-06
Tank Group 04	PB-883-23	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.00E-03	1.50E-03	9.1E-10	3.3E-06
Tank Group 04	PB-883-23	VOC	Toluene	108-88-3	ID	Y		1.50E-03	7.50E-04	NC	9.8E-07
Tank Group 04	PB-883-23	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.00E-03	1.50E-03	NC	1.6E-04
Tank Group 04	PB-883-23	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.00E-03	1.50E-03	NC	1.6E-04
Tank Group 04	PB-883-23	VOC	Xylenes (total)	1330-20-7	ID	Y		3.00E-03	1.50E-03	NC	9.8E-05
Tank Group 04	PB-883-23	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-23	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-23	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-23	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-23	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-23	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-23	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-883-23	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-883-23	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-23	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-23	INORG	Lead	7439-92-1	B2	Y	4.64E+00		4.64E+00	NC	NC
Tank Group 04	PB-883-24	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-883-24	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-883-24	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-883-24	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-883-24	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-883-24	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-883-24	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-883-24	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-883-24	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-883-24	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-883-24	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-24	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-24	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-24	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-24	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-883-24	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-24	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-883-24	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-883-24	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-24	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-883-24	INORG	Lead	7439-92-1	B2	Y	4.46E+00		4.46E+00	NC	NC
Tank Group 04	PB-884-01	VOC	Benzene	71-43-2	A	Y	3.00E-04		3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-884-01	VOC	Cumene	98-82-8	D	Y	7.20E-04		7.20E-04	NC	1.2E-05
Tank Group 04	PB-884-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-884-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.20E-04		NC	NC
Tank Group 04	PB-884-01	VOC	Ethyl Benzene	100-41-4	D	Y	2.30E-04		2.30E-04	NC	1.5E-06
Tank Group 04	PB-884-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-884-01	VOC	Toluene	108-88-3	ID	Y	1.00E-03		1.00E-03	NC	1.3E-06
Tank Group 04	PB-884-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.40E-03		2.40E-03	NC	2.6E-04
Tank Group 04	PB-884-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	8.80E-04		8.80E-04	NC	9.6E-05
Tank Group 04	PB-884-01	VOC	Xylenes (total)								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-884-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-02	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-02	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-884-02	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-884-02	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-02	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-02	INORG	Lead	7439-92-1	B2	Y	5.62E+00		5.62E+00	NC	NC
Tank Group 04	PB-884-03	VOC	Benzene	71-43-2	A	Y		5.30E-04	2.65E-04	4.8E-09	5.8E-05
Tank Group 04	PB-884-03	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-884-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.30E-04		NC	NC
Tank Group 04	PB-884-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-884-03	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-884-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-884-03	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-884-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-884-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-884-03	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-884-03	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	5.30E-02		5.30E-02	NC	NC
Tank Group 04	PB-884-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	5.10E-02		5.10E-02	NC	NC
Tank Group 04	PB-884-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-03	SVOC	Chrysene	218-01-9	B2	Y	4.80E-02		4.80E-02	NC	NC
Tank Group 04	PB-884-03	SVOC	Fluorene	86-73-7	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-884-03	SVOC	Naphthalene	91-20-3	C	Y		2.10E-01	1.05E-01	7.1E-07	2.0E-02
Tank Group 04	PB-884-03	SVOC	Phenanthrene	85-01-8	D	Y	3.30E-02		3.30E-02	NC	NC
Tank Group 04	PB-884-03	SVOC	Pyrene	129-00-0	NC	Y	5.50E-02		5.50E-02	NC	NC
Tank Group 04	PB-884-03	INORG	Lead	7439-92-1	B2	Y	8.80E+00		8.80E+00	NC	NC
Tank Group 04	PB-884-04	VOC	Benzene	71-43-2	A	Y		5.20E-04	2.60E-04	4.7E-09	5.7E-05
Tank Group 04	PB-884-04	VOC	Cumene	98-82-8	D	Y	7.80E-02		7.80E-02	NC	1.3E-03
Tank Group 04	PB-884-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-04		NC	NC
Tank Group 04	PB-884-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-884-04	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-884-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	3.00E-04		3.00E-04	1.8E-10	6.5E-07
Tank Group 04	PB-884-04	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-884-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.50E-02		1.50E-02	NC	1.6E-03
Tank Group 04	PB-884-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.50E-03		4.50E-03	NC	4.9E-04
Tank Group 04	PB-884-04	VOC	Xylenes (total)	1330-20-7	ID	Y	1.23E-03		1.23E-03	NC	8.1E-05
Tank Group 04	PB-884-04	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-04	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-04	SVOC	Fluorene	86-73-7	D	Y	3.50E-01		3.50E-01	NC	NC
Tank Group 04	PB-884-04	SVOC	Naphthalene	91-20-3	C	Y	7.30E-02		7.30E-02	5.0E-07	1.4E-02
Tank Group 04	PB-884-04	SVOC	Phenanthrene	85-01-8	D	Y	3.20E-01		3.20E-01	NC	NC
Tank Group 04	PB-884-04	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-04	INORG	Lead	7439-92-1	B2	Y	6.72E+00		6.72E+00	NC	NC
Tank Group 04	PB-884-05	VOC	Benzene	71-43-2	A	Y		8.00E-04	4.00E-04	7.3E-09	8.7E-05
Tank Group 04	PB-884-05	VOC	Cumene	98-82-8	D	Y		1.60E-03	8.00E-04	NC	1.3E-05
Tank Group 04	PB-884-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		8.00E-04		NC	NC
Tank Group 04	PB-884-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.60E-03		NC	NC
Tank Group 04	PB-884-05	VOC	Ethyl Benzene	100-41-4	D	Y		1.60E-03	8.00E-04	NC	5.2E-06
Tank Group 04	PB-884-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.20E-03	1.60E-03	9.7E-10	3.5E-06
Tank Group 04	PB-884-05	VOC	Toluene	108-88-3	ID	Y		1.60E-03	8.00E-04	NC	1.0E-06
Tank Group 04	PB-884-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.20E-03	1.60E-03	NC	1.7E-04
Tank Group 04	PB-884-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.20E-03	1.60E-03	NC	1.7E-04
Tank Group 04	PB-884-05	VOC	Xylenes (total)	1330-20-7	ID	Y		3.20E-03	1.60E-03	NC	1.0E-04
Tank Group 04	PB-884-05	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-05	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-05	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-05	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-884-05	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-05	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-05	INORG	Lead	7439-92-1	B2	Y	2.38E+00		2.38E+00	NC	NC
Tank Group 04	PB-884-06	VOC	Benzene	71-43-2	A	Y	3.00E-04		3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-884-06	VOC	Cumene	98-82-8	D	Y	3.90E-04		3.90E-04	NC	6.4E-06
Tank Group 04	PB-884-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-884-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.00E-04		NC	NC
Tank Group 04	PB-884-06	VOC	Ethyl Benzene	100-41-4	D	Y	5.20E-04		5.20E-04	NC	3.4E-06
Tank Group 04	PB-884-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-884-06	VOC	Toluene	108-88-3	ID	Y	6.90E-04		6.90E-04	NC	9.0E-07
Tank Group 04	PB-884-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	6.40E-03		6.40E-03	NC	7.0E-04
Tank Group 04	PB-884-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.20E-03		4.20E-03	NC	4.6E-04
Tank Group 04	PB-884-06	VOC	Xylenes (total)	1330-20-7	ID	Y	1.93E-03		1.93E-03	NC	1.3E-04
Tank Group 04	PB-884-06	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.80E-02		2.80E-02	NC	NC
Tank Group 04	PB-884-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-06	SVOC	Chrysene	218-01-9	B2	Y	2.70E-02		2.70E-02	NC	NC
Tank Group 04	PB-884-06	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-06	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-884-06	SVOC	Phenanthrene	85-01-8	D	Y	6.50E-02		6.50E-02	NC	NC
Tank Group 04	PB-884-06	SVOC	Pyrene	129-00-0	NC	Y	3.90E-02		3.90E-02	NC	NC
Tank Group 04	PB-884-06	INORG	Lead	7439-92-1	B2	Y	8.90E+01		8.90E+01	NC	NC
Tank Group 04	PB-884-07	VOC	Benzene	71-43-2	A	Y		6.60E-04	3.30E-04	6.0E-09	7.2E-05
Tank Group 04	PB-884-07	VOC	Cumene	98-82-8	D	Y		1.30E-03	6.50E-04	NC	1.1E-05
Tank Group 04	PB-884-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.60E-04		NC	NC
Tank Group 04	PB-884-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-884-07	VOC	Ethyl Benzene	100-41-4	D	Y		1.30E-03	6.50E-04	NC	4.3E-06
Tank Group 04	PB-884-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.70E-03	1.35E-03	8.2E-10	2.9E-06
Tank Group 04	PB-884-07	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank Group 04	PB-884-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.70E-03	1.35E-03	NC	1.5E-04
Tank Group 04	PB-884-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.70E-03	1.35E-03	NC	1.5E-04
Tank Group 04	PB-884-07	VOC	Xylenes (total)	1330-20-7	ID	Y		2.70E-03	1.35E-03	NC	8.8E-05
Tank Group 04	PB-884-07	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.00E-02		3.00E-02	NC	NC
Tank Group 04	PB-884-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-884-08	VOC	Toluene	108-88-3	ID	Y	8.20E-02		8.20E-02	NC	1.1E-04
Tank Group 04	PB-884-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.10E+00		2.10E+00	NC	2.3E-01
Tank Group 04	PB-884-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	6.60E-01		6.60E-01	NC	7.2E-02
Tank Group 04	PB-884-08	VOC	Xylenes (total)	1330-20-7	ID	Y	5.40E+00		5.40E+00	NC	3.5E-01
Tank Group 04	PB-884-08	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-884-08	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	5.80E-02		5.80E-02	NC	NC
Tank Group 04	PB-884-08	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	5.50E-02		5.50E-02	NC	NC
Tank Group 04	PB-884-08	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	8.00E-02		8.00E-02	NC	NC
Tank Group 04	PB-884-08	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	4.10E-02		4.10E-02	NC	NC
Tank Group 04	PB-884-08	SVOC	Chrysene	218-01-9	B2	Y	1.10E-01		1.10E-01	NC	NC
Tank Group 04	PB-884-08	SVOC	Fluorene	86-73-7	D	Y	2.50E-01		2.50E-01	NC	NC
Tank Group 04	PB-884-08	SVOC	Naphthalene	91-20-3	C	Y	8.40E-01		8.40E-01	5.7E-06	1.6E-01
Tank Group 04	PB-884-08	SVOC	Phenanthrene	85-01-8	D	Y	4.50E-01		4.50E-01	NC	NC
Tank Group 04	PB-884-08	SVOC	Pyrene	129-00-0	NC	Y	1.30E-01		1.30E-01	NC	NC
Tank Group 04	PB-884-08	INORG	Lead	7439-92-1	B2	Y	6.02E+01		6.02E+01	NC	NC
Tank Group 04	PB-884-09	VOC	Benzene	71-43-2	A	Y	2.00E+00		2.00E+00	3.6E-05	4.4E-01
Tank Group 04	PB-884-09	VOC	Cumene	98-82-8	D	Y	2.80E+00		2.80E+00	NC	4.6E-02
Tank Group 04	PB-884-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.40E-02		NC	NC
Tank Group 04	PB-884-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		6.80E-02		NC	NC
Tank Group 04	PB-884-09	VOC	Ethyl Benzene	100-41-4	D	Y	6.60E+00		6.60E+00	NC	4.3E-02
Tank Group 04	PB-884-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.40E-01	7.00E-02	4.3E-08	1.5E-04
Tank Group 04	PB-884-09	VOC	Toluene	108-88-3	ID	Y	1.30E+01		1.30E+01	NC	1.7E-02
Tank Group 04	PB-884-09	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.20E+01		1.20E+01	NC	1.3E+00
Tank Group 04	PB-884-09	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	3.70E+00		3.70E+00	NC	4.0E-01
Tank Group 04	PB-884-09	VOC	Xylenes (total)	1330-20-7	ID	Y	4.10E+01		4.10E+01	NC	2.7E+00
Tank Group 04	PB-884-09	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-09	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.20E-02		2.20E-02	NC	NC
Tank Group 04	PB-884-09	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-09	SVOC	Chrysene	218-01-9	B2	Y	9.20E-02		9.20E-02	NC	NC
Tank Group 04	PB-884-09	SVOC	Fluorene	86-73-7	D	Y	2.50E-01		2.50E-01	NC	NC
Tank Group 04	PB-884-09	SVOC	Naphthalene	91-20-3	C	Y	3.20E+00		3.20E+00	2.2E-05	6.0E-01
Tank Group 04	PB-884-09	SVOC	Phenanthrene	85-01-8	D	Y	7.00E-01		7.00E-01	NC	NC
Tank Group 04	PB-884-09	SVOC	Pyrene	129-00-0	NC	Y	5.60E-02		5.60E-02	NC	NC
Tank Group 04	PB-884-09	INORG	Lead	7439-92-1	B2	Y	1.95E+00		1.95E+00	NC	NC
Tank Group 04	PB-884-10	VOC	Benzene	71-43-2	A	Y		5.30E-04	2.65E-04	4.8E-09	5.8E-05
Tank Group 04	PB-884-10	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-884-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.30E-04		NC	NC
Tank Group 04	PB-884-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-884-10	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-884-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-884-10	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-884-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-884-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-884-10	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-884-10	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-10	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-10	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-10	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-884-10	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-10	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-10	INORG	Lead	7439-92-1	B2	Y	2.58E+00		2.58E+00	NC	NC
Tank Group 04	PB-884-11	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-884-11	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-884-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-884-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-884-11	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-884-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-884-11	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-884-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-884-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-884-11	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-884-11	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	8.90E-02		8.90E-02	NC	NC
Tank Group 04	PB-884-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	7.40E-02		7.40E-02	NC	NC
Tank Group 04	PB-884-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	9.50E-02		9.50E-02	NC	NC
Tank Group 04	PB-884-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	3.80E-02		3.80E-02	NC	NC
Tank Group 04	PB-884-11	SVOC	Chrysene	218-01-9	B2	Y	8.70E-02		8.70E-02	NC	NC
Tank Group 04	PB-884-11	SVOC	Fluorene	86-73-7	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-884-11	SVOC	Naphthalene	91-20-3	C	Y	6.80E-02		6.80E-02	4.6E-07	1.3E-02
Tank Group 04	PB-884-11	SVOC	Phenanthrene	85-01-8	D	Y	6.50E-02		6.50E-02	NC	NC
Tank Group 04	PB-884-11	SVOC	Pyrene	129-00-0	NC	Y	9.10E-02		9.10E-02	NC	NC
Tank Group 04	PB-884-11	INORG	Lead	7439-92-1	B2	Y	3.70E+01		3.70E+01	NC	NC
Tank Group 04	PB-884-12	VOC	Benzene	71-43-2	A	Y		5.65E-04	2.83E-04	5.2E-09	6.2E-05
Tank Group 04	PB-884-12	VOC	Cumene	98-82-8	D	Y		1.15E-03	5.75E-04	NC	9.4E-06
Tank Group 04	PB-884-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.65E-04		NC	NC
Tank Group 04	PB-884-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.15E-03		NC	NC
Tank Group 04	PB-884-12	VOC	Ethyl Benzene	100-41-4	D	Y		1.15E-03	5.75E-04	NC	3.8E-06
Tank Group 04	PB-884-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-884-12	VOC	Toluene	108-88-3	ID	Y		1.15E-03	5.75E-04	NC	7.5E-07
Tank Group 04	PB-884-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-884-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-884-12	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-884-12	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-12	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-12	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-884-12	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-884-12	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-12	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-12	INORG	Lead	7439-92-1	B2	Y	3.00E+01		3.00E+01	NC	NC
Tank Group 04	PB-884-13	VOC	Benzene	71-43-2	A	Y		5.20E-04	2.60E-04	4.7E-09	5.7E-05
Tank Group 04	PB-884-13	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-884-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-04		NC	NC
Tank Group 04	PB-884-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-884-13	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-884-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-884-13	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-884-13	INORG	Lead	7439-92-1	B2	Y	3.20E+00		3.20E+00	NC	NC
Tank Group 04	PB-884-14	VOC	Benzene	71-43-2	A	Y		5.40E-04	2.70E-04	4.9E-09	5.9E-05
Tank Group 04	PB-884-14	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-884-14	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-884-14	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-884-14	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-884-14	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-884-14	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-884-14	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-884-14	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-884-14	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-884-14	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-14	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-14	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-14	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-14	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-14	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-14	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-884-14	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-14	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-14	INORG	Lead	7439-92-1	B2	Y	2.63E+00		2.63E+00	NC	NC
Tank Group 04	PB-884-15	VOC	Benzene	71-43-2	A	Y	2.60E+00		2.60E+00	4.7E-05	5.7E-01
Tank Group 04	PB-884-15	VOC	Cumene	98-82-8	D	Y	3.60E+00		3.60E+00	NC	5.9E-02
Tank Group 04	PB-884-15	VOC	1,2-Dibromoethane	106-93-4	LC	N		2.90E-02		NC	NC
Tank Group 04	PB-884-15	VOC	1,2-Dichloroethane	107-06-2	B2	N		5.90E-02		NC	NC
Tank Group 04	PB-884-15	VOC	Ethyl Benzene	100-41-4	D	Y	8.80E+00		8.80E+00	NC	5.8E-02
Tank Group 04	PB-884-15	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.20E-01	6.00E-02	3.6E-08	1.3E-04
Tank Group 04	PB-884-15	VOC	Toluene	108-88-3	ID	Y	9.00E+00		9.00E+00	NC	1.2E-02
Tank Group 04	PB-884-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.40E+01		1.40E+01	NC	1.5E+00
Tank Group 04	PB-884-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.50E+00		4.50E+00	NC	4.9E-01
Tank Group 04	PB-884-15	VOC	Xylenes (total)	1330-20-7	ID	Y	4.70E+01		4.70E+01	NC	3.1E+00
Tank Group 04	PB-884-15	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-15	SVOC	Chrysene	218-01-9	B2	Y	5.90E-02		5.90E-02	NC	NC
Tank Group 04	PB-884-15	SVOC	Fluorene	86-73-7	D	Y	1.30E-01		1.30E-01	NC	NC
Tank Group 04	PB-884-15	SVOC	Naphthalene	91-20-3	C	Y	8.50E-01		8.50E-01	5.8E-06	1.6E-01
Tank Group 04	PB-884-15	SVOC	Phenanthrene	85-01-8	D	Y	4.50E-01		4.50E-01	NC	NC
Tank Group 04	PB-884-15	SVOC	Pyrene	129-00-0	NC	Y	3.60E-02		3.60E-02	NC	NC
Tank Group 04	PB-884-15	INORG	Lead	7439-92-1	B2	Y	1.68E+00		1.68E+00	NC	NC
Tank Group 04	PB-884-16	VOC	Benzene	71-43-2	A	Y		9.00E-04	4.50E-04	8.2E-09	9.8E-05
Tank Group 04	PB-884-16	VOC	Cumene	98-82-8	D	Y		1.80E-03	9.00E-04	NC	1.5E-05
Tank Group 04	PB-884-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		9.00E-04		NC	NC
Tank Group 04	PB-884-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.80E-03		NC	NC
Tank Group 04	PB-884-16	VOC	Ethyl Benzene	100-41-4	D	Y		1.80E-03	9.00E-04	NC	5.9E-06
Tank Group 04	PB-884-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		3.60E-03	1.80E-03	1.1E-09	3.9E-06
Tank Group 04	PB-884-16	VOC	Toluene	108-88-3	ID	Y		1.80E-03	9.00E-04	NC	1.2E-06
Tank Group 04	PB-884-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		3.60E-03	1.80E-03	NC	2.0E-04
Tank Group 04	PB-884-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		3.60E-03	1.80E-03	NC	2.0E-04
Tank Group 04	PB-884-16	VOC	Xylenes (total)	1330-20-7	ID	Y		3.60E-03	1.80E-03	NC	1.2E-04
Tank Group 04	PB-884-16	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-16	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-16	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-16	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-884-16	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-16	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-16	INORG	Lead	7439-92-1	B2	Y	1.86E+00		1.86E+00	NC	NC
Tank Group 04	PB-884-17	VOC	Benzene	71-43-2	A	Y		5.80E-04	2.90E-04	5.3E-09	6.3E-05
Tank Group 04	PB-884-17	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-884-17	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.80E-04		NC	NC
Tank Group 04	PB-884-17	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-884-17	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-884-17	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-884-17	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-884-17	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-884-17	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-884-17	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-884-17	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-17	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-17	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-17	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-17	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-17	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-17	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-884-17	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-884-17	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-17	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-17	INORG	Lead	7439-92-1	B2	Y	1.99E+00		1.99E+00	NC	NC
Tank Group 04	PB-884-18	VOC	Benzene	71-43-2	A	Y	3.50E-02		3.50E-02	6.4E-07	7.6E-03
Tank Group 04	PB-884-18	VOC	Cumene	98-82-8	D	Y	5.30E-03		5.30E-03	NC	8.7E-05
Tank Group 04	PB-884-18	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.50E-04		NC	NC
Tank Group 04	PB-884-18	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-884-18	VOC	Ethyl Benzene	100-41-4	D	Y	2.40E-02		2.40E-02	NC	1.6E-04
Tank Group 04	PB-884-18	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	5.40E-04		5.40E-04	3.3E-10	1.2E-06
Tank Group 04	PB-884-18	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-884-18	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	3.30E-02		3.30E-02	NC	3.6E-03
Tank Group 04	PB-884-18	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.00E-02		1.00E-02	NC	1.1E-03
Tank Group 04	PB-884-18	VOC	Xylenes (total)	1330-20-7	ID	Y	2.75E-02		2.75E-02	NC	1.8E-03
Tank Group 04	PB-884-18	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-18	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-18	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-18	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-18	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-18	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-18	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-884-18	SVOC	Naphthalene	91-20-3	C	Y	5.00E-02		5.00E-02	3.4E-07	9.3E-03
Tank Group 04	PB-884-18	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-18	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-18	INORG	Lead	7439-92-1	B2	Y	7.17E+00		7.17E+00	NC	NC
Tank Group 04	PB										

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-884-19	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-19	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-19	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-19	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-19	SVOC	Naphthalene	91-20-3	C	Y	8.50E-02		8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-884-19	SVOC	Phenanthrene	85-01-8	D	Y	4.00E-02		4.00E-02	NC	NC
Tank Group 04	PB-884-19	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-19	INORG	Lead	7439-92-1	B2	Y	1.61E+00		1.61E+00	NC	NC
Tank Group 04	PB-884-20	VOC	Benzene	71-43-2	A	Y		5.50E-04	2.75E-04	5.0E-09	6.0E-05
Tank Group 04	PB-884-20	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-884-20	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.50E-04		NC	NC
Tank Group 04	PB-884-20	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-884-20	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-884-20	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-884-20	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-884-20	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-884-20	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-884-20	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-884-20	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-20	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-20	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-20	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-20	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-20	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-20	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-20	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-884-20	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-20	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-20	INORG	Lead	7439-92-1	B2	Y	1.04E+00		1.04E+00	NC	NC
Tank Group 04	PB-884-21	VOC	Benzene	71-43-2	A	Y		4.70E-04	2.35E-04	4.3E-09	5.1E-05
Tank Group 04	PB-884-21	VOC	Cumene	98-82-8	D	Y		9.40E-04	4.70E-04	NC	7.7E-06
Tank Group 04	PB-884-21	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.70E-04		NC	NC
Tank Group 04	PB-884-21	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.40E-04		NC	NC
Tank Group 04	PB-884-21	VOC	Ethyl Benzene	100-41-4	D	Y		9.40E-04	4.70E-04	NC	3.1E-06
Tank Group 04	PB-884-21	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-884-21	VOC	Toluene	108-88-3	ID	Y		9.40E-04	4.70E-04	NC	6.2E-07
Tank Group 04	PB-884-21	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-884-21	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-884-21	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-884-21	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-21	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-21	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-21	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-21	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-21	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-21	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-21	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-884-21	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-21	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-21	INORG	Lead	7439-92-1	B2	Y	1.98E+00		1.98E+00	NC	NC
Tank Group 04	PB-884-22	VOC	Benzene	71-43-2	A	Y		6.60E-04	3.30E-04	6.0E-09	7.2E-05
Tank Group 04	PB-884-22	VOC	Cumene	98-82-8	D	Y		1.30E-03	6.50E-04	NC	1.1E-05
Tank Group 04	PB-884-22	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.60E-04		NC	NC
Tank Group 04	PB-884-22	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-884-22	VOC	Ethyl Benzene	100-41-4	D	Y		1.30E-03	6.50E-04	NC	4.3E-06
Tank Group 04	PB-884-22	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.60E-03	1.30E-03	7.9E-10	2.8E-06
Tank Group 04	PB-884-22	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank Group 04	PB-884-22	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.60E-03	1.30E-03	NC	1.4E-04
Tank Group 04	PB-884-22	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.60E-03	1.30E-03	NC	1.4E-04
Tank Group 04	PB-884-22	VOC	Xylenes (total)	1330-20-7	ID	Y		2.60E-03	1.30E-03	NC	8.5E-05
Tank Group 04	PB-884-22	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-884-22	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-884-22	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-22	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-884-22	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-22	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-884-22	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-884-22	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-884-22	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-884-22	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-884-22	INORG	Lead	7439-92-1	B2	Y	2.77E+00		2.77E+00	NC	NC
Tank Group 04	PB-884-23	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-884-23	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-884-23	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-884-23	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-884-23	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-884-23	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-884-23	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-884-23	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-884-23	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-884-23	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-884-23	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-23	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-23	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-23	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-23	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-23	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-23	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-884-23	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-884-23	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-23	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-884-23	INORG	Lead	7439-92-1	B2	Y	1.61E+00		1.61E+00	NC	NC
Tank Group 04	PB-884-24	VOC	Benzene	71-43-2	A	Y	3.40E-02		3.40E-02	6.2E-07	7.4E-03
Tank Group 04	PB-884-24	VOC	Cumene	98-82-8	D	Y	3.00E-02		3.00E-02	NC	4.9E-04
Tank Group 04	PB-884-24	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.30E-04		NC	NC
Tank Group 04	PB-884-24	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-884-24	VOC	Ethyl Benzene	100-41-4	D	Y	9.50E-02		9.50E-02	NC	6.2E-04
Tank Group 04	PB-884-24	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.50E-03	1.25E-03	7.6E-10	2.7E-06
Tank Group 04	PB-884-24	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank Group 04	PB-884-24	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.30E-01		1.30E-01	NC	1.4E-02
Tank Group 04	PB-884-24	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.20E-02		4.20E-02	NC	4.6E-03
Tank Group 04	PB-884-24	VOC	Xylenes (total)	1330-20-7	ID	Y	3.62E-01		3.62E-01	NC	2.4E-02
Tank Group 04	PB-884-24	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-24	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	4.80E-02		4.80E-02	NC	NC
Tank Group 04	PB-884-24	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-24	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	4.60E-02		4.60E-02	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-884-25	VOC	Toluene	108-88-3	ID	Y	1.50E+01		1.50E+01	NC	2.0E-02
Tank Group 04	PB-884-25	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.20E+01		1.20E+01	NC	1.3E+00
Tank Group 04	PB-884-25	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	3.80E+00		3.80E+00	NC	4.1E-01
Tank Group 04	PB-884-25	VOC	Xylenes (total)	1330-20-7	ID	Y	4.10E+01		4.10E+01	NC	2.7E+00
Tank Group 04	PB-884-25	SVOC	Anthracene	120-12-7	ID	Y	3.50E-02		3.50E-02	NC	NC
Tank Group 04	PB-884-25	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.20E-02		2.20E-02	NC	NC
Tank Group 04	PB-884-25	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-25	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-884-25	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-884-25	SVOC	Chrysene	218-01-9	B2	Y	8.40E-02		8.40E-02	NC	NC
Tank Group 04	PB-884-25	SVOC	Fluorene	86-73-7	D	Y	3.10E-01		3.10E-01	NC	NC
Tank Group 04	PB-884-25	SVOC	Naphthalene	91-20-3	C	Y	2.10E+00		2.10E+00	1.4E-05	3.9E-01
Tank Group 04	PB-884-25	SVOC	Phenanthrene	85-01-8	D	Y	5.30E-01		5.30E-01	NC	NC
Tank Group 04	PB-884-25	SVOC	Pyrene	129-00-0	NC	Y	4.80E-02		4.80E-02	NC	NC
Tank Group 04	PB-884-25	INORG	Lead	7439-92-1	B2	Y	3.11E+00		3.11E+00	NC	NC
Tank Group 04	PB-884-26	VOC	Benzene	71-43-2	A	Y		6.00E-04	3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-884-26	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-884-26	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.00E-04		NC	NC
Tank Group 04	PB-884-26	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-884-26	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-884-26	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-884-26	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-884-26	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-884-26	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-884-26	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-884-26	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-26	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-26	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-26	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-26	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-26	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-26	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-884-26	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-884-26	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-26	SVOC	Pyrene	129-00-0	NC	Y	2.50E-02		2.50E-02	NC	NC
Tank Group 04	PB-884-26	INORG	Lead	7439-92-1	B2	Y	2.65E+01		2.65E+01	NC	NC
Tank Group 04	PB-884-27	VOC	Benzene	71-43-2	A	Y		2.50E-04	1.25E-04	2.3E-09	2.7E-05
Tank Group 04	PB-884-27	VOC	Cumene	98-82-8	D	Y		5.00E-04	2.50E-04	NC	4.1E-06
Tank Group 04	PB-884-27	VOC	1,2-Dibromoethane	106-93-4	LC	N		2.50E-04		NC	NC
Tank Group 04	PB-884-27	VOC	1,2-Dichloroethane	107-06-2	B2	N		5.00E-04		NC	NC
Tank Group 04	PB-884-27	VOC	Ethyl Benzene	100-41-4	D	Y		5.00E-04	2.50E-04	NC	1.6E-06
Tank Group 04	PB-884-27	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.00E-03	5.00E-04	3.0E-10	1.1E-06
Tank Group 04	PB-884-27	VOC	Toluene	108-88-3	ID	Y		5.00E-04	2.50E-04	NC	3.3E-07
Tank Group 04	PB-884-27	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.00E-03	5.00E-04	NC	5.5E-05
Tank Group 04	PB-884-27	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.00E-03	5.00E-04	NC	5.5E-05
Tank Group 04	PB-884-27	VOC	Xylenes (total)	1330-20-7	ID	Y		1.00E-03	5.00E-04	NC	3.3E-05
Tank Group 04	PB-884-27	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-27	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-27	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-27	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-27	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-27	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-27	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-884-27	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-884-27	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-27	SVOC	Pyrene	129-00-0	NC	Y	1.20E-01		6.00E-02	NC	NC
Tank Group 04	PB-884-27	INORG	Lead	7439-92-1	B2	Y	1.15E+01		1.15E+01	NC	NC
Tank Group 04	PB-884-28	VOC	Benzene	71-43-2	A	Y		4.80E-04	2.40E-04	4.4E-09	5.2E-05
Tank Group 04	PB-884-28	VOC	Cumene	98-82-8	D	Y		9.60E-04	4.80E-04	NC	7.9E-06
Tank Group 04	PB-884-28	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC
Tank Group 04	PB-884-28	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.60E-04		NC	NC
Tank Group 04	PB-884-28	VOC	Ethyl Benzene	100-41-4	D	Y		9.60E-04	4.80E-04	NC	3.1E-06
Tank Group 04	PB-884-28	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-884-28	VOC	Toluene	108-88-3	ID	Y		9.60E-04	4.80E-04	NC	6.3E-07
Tank Group 04	PB-884-28	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-884-28	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-884-28	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-884-28	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-28	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	4.20E-02		4.20E-02	NC	NC
Tank Group 04	PB-884-28	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-28	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	3.90E-02		3.90E-02	NC	NC
Tank Group 04	PB-884-28	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-28	SVOC	Chrysene	218-01-9	B2	Y	3.80E-02		3.80E-02	NC	NC
Tank Group 04	PB-884-28	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-884-28	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-884-28	SVOC	Phenanthrene	85-01-8	D	Y	4.50E-02		4.50E-02	NC	NC
Tank Group 04	PB-884-28	SVOC	Pyrene	129-00-0	NC	Y	6.00E-02		6.00E-02	NC	NC
Tank Group 04	PB-884-28	INORG	Lead	7439-92-1	B2	Y	9.37E+00		9.37E+00	NC	NC
Tank Group 04	PB-884-29	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05
Tank Group 04	PB-884-29	VOC	Cumene	98-82-8	D	Y		9.00E-04	4.50E-04	NC	7.4E-06
Tank Group 04	PB-884-29	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-884-29	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.00E-04		NC	NC
Tank Group 04	PB-884-29	VOC	Ethyl Benzene	100-41-4	D	Y		9.00E-04	4.50E-04	NC	2.9E-06
Tank Group 04	PB-884-29	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-884-29	VOC	Toluene	108-88-3	ID	Y		9.00E-04	4.50E-04	NC	5.9E-07
Tank Group 04	PB-884-29	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-884-29	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-884-29	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-884-29	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-29	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-29	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-29	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-29	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-884-29	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-29	SVOC	Fluorene	86-73-7	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-884-29	SVOC	Naphthalene	91-20-3	C	Y		2.10E-01	1.05E-01	7.1E-07	2.0E-02
Tank Group 04	PB-884-29	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-884-29	SVOC	Pyrene	129-00-0	NC	Y	1.20E-01		6.00E-02	NC	NC
Tank Group 04	PB-884-29	INORG	Lead	7439-92-1	B2	Y	4.49E+00		4.49E+00	NC	NC
Tank Group 04	PB-885-01	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-885-01	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-885-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-885-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-885-01	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-885-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-885-01	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-885-01	INORG	Lead	7439-92-1	B2	Y	1.50E+02		1.50E+02	NC	NC
Tank Group 04	PB-885-02	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-885-02	VOC	Cumene	98-82-8	D	Y		9.90E-04	4.95E-04	NC	8.1E-06
Tank Group 04	PB-885-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-885-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.90E-04		NC	NC
Tank Group 04	PB-885-02	VOC	Ethyl Benzene	100-41-4	D	Y		9.90E-04	4.95E-04	NC	3.2E-06
Tank Group 04	PB-885-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-885-02	VOC	Toluene	108-88-3	ID	Y		9.90E-04	4.95E-04	NC	6.5E-07
Tank Group 04	PB-885-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-885-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-885-02	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-885-02	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	3.10E-02		3.10E-02	NC	NC
Tank Group 04	PB-885-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	5.40E-02		5.40E-02	NC	NC
Tank Group 04	PB-885-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	7.50E-02		7.50E-02	NC	NC
Tank Group 04	PB-885-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y	4.80E-02		4.80E-02	NC	NC
Tank Group 04	PB-885-02	SVOC	Chrysene	218-01-9	B2	Y	3.60E-02		3.60E-02	NC	NC
Tank Group 04	PB-885-02	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-885-02	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-885-02	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-02	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-02	INORG	Lead	7439-92-1	B2	Y	4.39E+01		4.39E+01	NC	NC
Tank Group 04	PB-885-03	VOC	Benzene	71-43-2	A	Y		5.40E-04	2.70E-04	4.9E-09	5.9E-05
Tank Group 04	PB-885-03	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-885-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-885-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-885-03	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-885-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-885-03	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-885-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-885-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-885-03	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-885-03	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-03	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-03	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-03	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-03	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-03	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-03	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-03	INORG	Lead	7439-92-1	B2	Y	2.68E+00		2.68E+00	NC	NC
Tank Group 04	PB-885-04	VOC	Benzene	71-43-2	A	Y		4.60E-04	2.30E-04	4.2E-09	5.0E-05
Tank Group 04	PB-885-04	VOC	Cumene	98-82-8	D	Y		9.10E-04	4.55E-04	NC	7.4E-06
Tank Group 04	PB-885-04	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-885-04	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.10E-04		NC	NC
Tank Group 04	PB-885-04	VOC	Ethyl Benzene	100-41-4	D	Y		9.10E-04	4.55E-04	NC	3.0E-06
Tank Group 04	PB-885-04	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-885-04	VOC	Toluene	108-88-3	ID	Y		9.10E-04	4.55E-04	NC	6.0E-07
Tank Group 04	PB-885-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-885-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-885-04	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-885-04	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-04	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-04	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-04	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-04	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-04	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-04	INORG	Lead	7439-92-1	B2	Y	1.56E+00		1.56E+00	NC	NC
Tank Group 04	PB-885-05	VOC	Benzene	71-43-2	A	Y		4.70E-04	2.35E-04	4.3E-09	5.1E-05
Tank Group 04	PB-885-05	VOC	Cumene	98-82-8	D	Y		9.50E-04	4.75E-04	NC	7.8E-06
Tank Group 04	PB-885-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.70E-04		NC	NC
Tank Group 04	PB-885-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.50E-04		NC	NC
Tank Group 04	PB-885-05	VOC	Ethyl Benzene	100-41-4	D	Y		9.50E-04	4.75E-04	NC	3.1E-06
Tank Group 04	PB-885-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-885-05	VOC	Toluene	108-88-3	ID	Y		9.50E-04	4.75E-04	NC	6.2E-07
Tank Group 04	PB-885-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-885-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-885-05	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-885-05	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-05	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-05	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-05	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-05	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-05	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-05	INORG	Lead	7439-92-1	B2	Y	1.39E+00		1.39E+00	NC	NC
Tank Group 04	PB-885-06	VOC	Benzene	71-43-2	A	Y		5.60E-04	2.80E-04	5.1E-09	6.1E-05
Tank Group 04	PB-885-06	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-885-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.60E-04		NC	NC
Tank Group 04	PB-885-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-885-06	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-885-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-885-06	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-885-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-885-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-885-06	VOC	Xylenes (total)								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-885-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-885-07	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-07	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-885-07	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-885-07	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-07	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-07	INORG	Lead	7439-92-1	B2	Y	1.74E+01		1.74E+01	NC	NC
Tank Group 04	PB-885-08	VOC	Benzene	71-43-2	A	Y		4.20E-04	2.10E-04	3.8E-09	4.6E-05
Tank Group 04	PB-885-08	VOC	Cumene	98-82-8	D	Y		8.30E-04	4.15E-04	NC	6.8E-06
Tank Group 04	PB-885-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.20E-04		NC	NC
Tank Group 04	PB-885-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.30E-04		NC	NC
Tank Group 04	PB-885-08	VOC	Ethyl Benzene	100-41-4	D	Y		8.30E-04	4.15E-04	NC	2.7E-06
Tank Group 04	PB-885-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-885-08	VOC	Toluene	108-88-3	ID	Y		8.30E-04	4.15E-04	NC	5.4E-07
Tank Group 04	PB-885-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-08	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-885-08	SVOC	Anthracene	120-12-7	ID	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-885-08	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-885-08	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		2.80E-01	1.40E-01	NC	NC
Tank Group 04	PB-885-08	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-885-08	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		2.80E-01	1.40E-01	NC	NC
Tank Group 04	PB-885-08	SVOC	Chrysene	218-01-9	B2	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-885-08	SVOC	Fluorene	86-73-7	D	Y		3.50E-01	1.75E-01	NC	NC
Tank Group 04	PB-885-08	SVOC	Naphthalene	91-20-3	C	Y		3.50E-01	1.75E-01	1.2E-06	3.3E-02
Tank Group 04	PB-885-08	SVOC	Phenanthrene	85-01-8	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-885-08	SVOC	Pyrene	129-00-0	NC	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-885-08	INORG	Lead	7439-92-1	B2	Y	9.07E+00		9.07E+00	NC	NC
Tank Group 04	PB-885-09	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-885-09	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-885-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-885-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-885-09	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-885-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-885-09	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-885-09	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-885-09	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-885-09	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-885-09	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-09	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-09	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-885-09	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-09	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-885-09	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-09	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-885-09	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-885-09	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-09	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-09	INORG	Lead	7439-92-1	B2	Y	7.61E+00		7.61E+00	NC	NC
Tank Group 04	PB-885-10	VOC	Benzene	71-43-2	A	Y		5.80E-04	2.90E-04	5.3E-09	6.3E-05
Tank Group 04	PB-885-10	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-885-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.80E-04		NC	NC
Tank Group 04	PB-885-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-885-10	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-885-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-885-10	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-885-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-885-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-885-10	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-885-10	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-10	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-10	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-885-10	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-885-10	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-10	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-10	INORG	Lead	7439-92-1	B2	Y	3.04E+00		3.04E+00	NC	NC
Tank Group 04	PB-885-11	VOC	Benzene	71-43-2	A	Y		5.30E-04	2.65E-04	4.8E-09	5.8E-05
Tank Group 04	PB-885-11	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-885-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.30E-04		NC	NC
Tank Group 04	PB-885-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-885-11	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-885-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-885-11	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-885-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-885-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-885-11	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-885-11	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-11	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-11	SVOC	Fluorene	86-73-7	D	Y		2.10E-01	1.05E-01	NC	NC
Tank Group 04	PB-885-11	SVOC	Naphthalene	91-20-3	C	Y		2.10E-01	1.05E-01	7.1E-07	2.0E-02
Tank Group 04	PB-885-11	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-11	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-11	INORG	Lead	7439-92-1	B2	Y	6.43E+00		6.43E+00	NC	NC
Tank Group 04	PB-885-12	VOC	Benzene	71-43-2	A	Y		4.30E-04	2.15E-04	3.9E-09	4.7E-05
Tank Group 04	PB-885-12	VOC	Cumene	98-82-8	D	Y		8.70E-04	4.35E-04	NC	7.1E-06
Tank Group 04	PB-885-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.30E-04		NC	NC
Tank Group 04	PB-885-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.70E-04		NC	NC
Tank Group 04	PB-885-12	VOC	Ethyl Benzene	100-41-4	D	Y		8.70E-04	4.35E-04	NC	2.8E-06
Tank Group 04	PB-885-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-885-12	VOC	Toluene	108-88-3	ID	Y		8.70E-04	4.35E-04	NC	5.7E-07
Tank Group 04	PB-885-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-12	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-885-12	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-885-13	VOC	Toluene	108-88-3	ID	Y		9.50E-04	4.75E-04	NC	6.2E-07
Tank Group 04	PB-885-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-885-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-885-13	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-885-13	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-13	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-13	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-13	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-13	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-13	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-13	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-13	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-13	INORG	Lead	7439-92-1	B2	Y	1.72E+00		1.72E+00	NC	NC
Tank Group 04	PB-885-14	VOC	Benzene	71-43-2	A	Y		4.20E-04	2.10E-04	3.8E-09	4.6E-05
Tank Group 04	PB-885-14	VOC	Cumene	98-82-8	D	Y		8.40E-04	4.20E-04	NC	6.9E-06
Tank Group 04	PB-885-14	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.20E-04		NC	NC
Tank Group 04	PB-885-14	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.40E-04		NC	NC
Tank Group 04	PB-885-14	VOC	Ethyl Benzene	100-41-4	D	Y		8.40E-04	4.20E-04	NC	2.8E-06
Tank Group 04	PB-885-14	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-885-14	VOC	Toluene	108-88-3	ID	Y		8.40E-04	4.20E-04	NC	5.5E-07
Tank Group 04	PB-885-14	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-14	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-14	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-885-14	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-14	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-14	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-14	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-14	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-14	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-14	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-14	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-14	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-14	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-14	INORG	Lead	7439-92-1	B2	Y	1.45E+00		1.45E+00	NC	NC
Tank Group 04	PB-885-15	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05
Tank Group 04	PB-885-15	VOC	Cumene	98-82-8	D	Y		9.00E-04	4.50E-04	NC	7.4E-06
Tank Group 04	PB-885-15	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-885-15	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.00E-04		NC	NC
Tank Group 04	PB-885-15	VOC	Ethyl Benzene	100-41-4	D	Y		9.00E-04	4.50E-04	NC	2.9E-06
Tank Group 04	PB-885-15	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-885-15	VOC	Toluene	108-88-3	ID	Y		9.00E-04	4.50E-04	NC	5.9E-07
Tank Group 04	PB-885-15	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-885-15	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-885-15	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-885-15	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-15	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-15	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-15	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-15	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-15	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-15	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-15	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-15	INORG	Lead	7439-92-1	B2	Y	1.48E+00		1.48E+00	NC	NC
Tank Group 04	PB-885-16	VOC	Benzene	71-43-2	A	Y		5.60E-04	2.80E-04	5.1E-09	6.1E-05
Tank Group 04	PB-885-16	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-885-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.60E-04		NC	NC
Tank Group 04	PB-885-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-885-16	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-885-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-885-16	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-885-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-885-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-885-16	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-885-16	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-885-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-885-16	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-16	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-885-16	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-885-16	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-16	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-16	INORG	Lead	7439-92-1	B2	Y	8.76E+00		8.76E+00	NC	NC
Tank Group 04	PB-885-17	VOC	Benzene	71-43-2	A	Y		4.35E-04	2.18E-04	4.0E-09	4.7E-05
Tank Group 04	PB-885-17	VOC	Cumene	98-82-8	D	Y		8.75E-04	4.38E-04	NC	7.2E-06
Tank Group 04	PB-885-17	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.35E-04		NC	NC
Tank Group 04	PB-885-17	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.75E-04		NC	NC
Tank Group 04	PB-885-17	VOC	Ethyl Benzene	100-41-4	D	Y		8.75E-04	4.38E-04	NC	2.9E-06
Tank Group 04	PB-885-17	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-885-17	VOC	Toluene	108-88-3	ID	Y		8.75E-04	4.38E-04	NC	5.7E-07
Tank Group 04	PB-885-17	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-17	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-17	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-885-17	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-17	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-17	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-885-17	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-17	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-885-17	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-17	SVOC	Fluorene	86-73-7	D	Y		1.85E-01	9.25E-02	NC	NC
Tank Group 04	PB-885-17	SVOC	Naphthalene	91-20-3	C	Y		1.85E-01	9.25E-02	6.3E-07	1.7E-02
Tank Group 04	PB-885-17	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-17	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-17	INORG	Lead	7439-92-1	B2	Y	1.89E+00		1.89E+00	NC	NC
Tank Group 04	PB-885-18	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05
Tank Group 04	PB-885-18	VOC	Cumene	98-82-8	D	Y		9.00E-04	4.50E-04	NC	7.4E-06
Tank Group 04	PB-885-18	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-885-18	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.00E-04		NC	NC
Tank Group 04	PB-885-18	VOC	Ethyl Benzene	100-41-4	D	Y		9.00E-04	4.50E-04	NC	2.9E-06
Tank Group 04	PB-885-18	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-885-18	VOC	Toluene	108-88-3	ID	Y		9.00E-04	4.50E-04	NC	5.9E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-885-18	INORG	Lead	7439-92-1	B2	Y	1.49E+00		1.49E+00	NC	NC
Tank Group 04	PB-885-19	VOC	Benzene	71-43-2	A	Y		4.40E-04	2.20E-04	4.0E-09	4.8E-05
Tank Group 04	PB-885-19	VOC	Cumene	98-82-8	D	Y		8.70E-04	4.35E-04	NC	7.1E-06
Tank Group 04	PB-885-19	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.40E-04		NC	NC
Tank Group 04	PB-885-19	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.70E-04		NC	NC
Tank Group 04	PB-885-19	VOC	Ethyl Benzene	100-41-4	D	Y		8.70E-04	4.35E-04	NC	2.8E-06
Tank Group 04	PB-885-19	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-885-19	VOC	Toluene	108-88-3	ID	Y		8.70E-04	4.35E-04	NC	5.7E-07
Tank Group 04	PB-885-19	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-19	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-19	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-885-19	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-19	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-19	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-885-19	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-19	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-885-19	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-19	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-885-19	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-885-19	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-19	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-19	INORG	Lead	7439-92-1	B2	Y	1.93E+00		1.93E+00	NC	NC
Tank Group 04	PB-885-20	VOC	Benzene	71-43-2	A	Y		4.90E-04	2.45E-04	4.5E-09	5.3E-05
Tank Group 04	PB-885-20	VOC	Cumene	98-82-8	D	Y		9.90E-04	4.95E-04	NC	8.1E-06
Tank Group 04	PB-885-20	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.90E-04		NC	NC
Tank Group 04	PB-885-20	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.90E-04		NC	NC
Tank Group 04	PB-885-20	VOC	Ethyl Benzene	100-41-4	D	Y		9.90E-04	4.95E-04	NC	3.2E-06
Tank Group 04	PB-885-20	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-885-20	VOC	Toluene	108-88-3	ID	Y		9.90E-04	4.95E-04	NC	6.5E-07
Tank Group 04	PB-885-20	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-885-20	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-885-20	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-885-20	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-20	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-20	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-20	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-20	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-20	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-20	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-20	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-20	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-20	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-20	INORG	Lead	7439-92-1	B2	Y	1.63E+00		1.63E+00	NC	NC
Tank Group 04	PB-885-21	VOC	Benzene	71-43-2	A	Y		5.60E-04	2.80E-04	5.1E-09	6.1E-05
Tank Group 04	PB-885-21	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-885-21	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.60E-04		NC	NC
Tank Group 04	PB-885-21	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-885-21	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-885-21	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.20E-03	1.10E-03	6.7E-10	2.4E-06
Tank Group 04	PB-885-21	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-885-21	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-885-21	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.20E-03	1.10E-03	NC	1.2E-04
Tank Group 04	PB-885-21	VOC	Xylenes (total)	1330-20-7	ID	Y		2.20E-03	1.10E-03	NC	7.2E-05
Tank Group 04	PB-885-21	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-21	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-21	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-21	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-21	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-21	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-21	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-21	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-21	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-21	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-21	INORG	Lead	7439-92-1	B2	Y	3.11E+00		3.11E+00	NC	NC
Tank Group 04	PB-885-22	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-885-22	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-885-22	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-885-22	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-885-22	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-885-22	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-885-22	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-885-22	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-885-22	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-885-22	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-885-22	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-22	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-22	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-885-22	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-22	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-885-22	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-22	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-885-22	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-885-22	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-22	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-885-22	INORG	Lead	7439-92-1	B2	Y	4.76E+00		4.76E+00	NC	NC
Tank Group 04	PB-885-23	VOC	Benzene	71-43-2	A	Y		1.73E-02	8.65E-03	1.6E-07	1.9E-03
Tank Group 04	PB-885-23	VOC	Cumene	98-82-8	D	Y	1.00E+00		1.00E+00	NC	1.6E-02
Tank Group 04	PB-885-23	VOC	1,2-Dibromoethane	106-93-4	LC	N		1.73E-02		NC	NC
Tank Group 04	PB-885-23	VOC	1,2-Dichloroethane	107-06-2	B2	N		3.41E-02		NC	NC
Tank Group 04	PB-885-23	VOC	Ethyl Benzene	100-41-4	D	Y	8.30E-03		8.30E-03	NC	5.4E-05
Tank Group 04	PB-885-23	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		6.62E-02	3.31E-02	2.0E-08	7.2E-05
Tank Group 04	PB-885-23	VOC	Toluene	108-88-3	ID	Y		3.41E-02	1.71E-02	NC	2.2E-05
Tank Group 04	PB-885-23	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.76E-02		2.76E-02	NC	3.0E-03
Tank Group 04	PB-885-23	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		6.62E-02	3.31E-02	NC	3.6E-03
Tank Group 04	PB-885-23	VOC	Xylenes (total)								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-885-24	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-24	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-885-24	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-24	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-885-24	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-885-24	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-24	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-885-24	INORG	Lead	7439-92-1	B2	Y	1.63E+00		1.63E+00	NC	NC
Tank Group 04	PB-885-25	VOC	Benzene	71-43-2	A	Y		4.20E-04	2.10E-04	3.8E-09	4.6E-05
Tank Group 04	PB-885-25	VOC	Cumene	98-82-8	D	Y		8.50E-04	4.25E-04	NC	7.0E-06
Tank Group 04	PB-885-25	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.20E-04		NC	NC
Tank Group 04	PB-885-25	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.50E-04		NC	NC
Tank Group 04	PB-885-25	VOC	Ethyl Benzene	100-41-4	D	Y		8.50E-04	4.25E-04	NC	2.8E-06
Tank Group 04	PB-885-25	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-885-25	VOC	Toluene	108-88-3	ID	Y		8.50E-04	4.25E-04	NC	5.6E-07
Tank Group 04	PB-885-25	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-25	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-885-25	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-885-25	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-25	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-25	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-25	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-25	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-25	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-25	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-25	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-25	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-25	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-25	INORG	Lead	7439-92-1	B2	Y	1.50E+00		1.50E+00	NC	NC
Tank Group 04	PB-885-26	VOC	Benzene	71-43-2	A	Y		6.00E-04	3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-885-26	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-885-26	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.00E-04		NC	NC
Tank Group 04	PB-885-26	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-885-26	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-885-26	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-885-26	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-885-26	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-885-26	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.40E-03	1.20E-03	NC	1.3E-04
Tank Group 04	PB-885-26	VOC	Xylenes (total)	1330-20-7	ID	Y		2.40E-03	1.20E-03	NC	7.9E-05
Tank Group 04	PB-885-26	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-26	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-26	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-26	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-26	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-885-26	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-26	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-885-26	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-885-26	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-26	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-885-26	INORG	Lead	7439-92-1	B2	Y	2.28E+00		2.28E+00	NC	NC
Tank Group 04	PB-886-01	VOC	Benzene	71-43-2	A	Y		4.80E-04	2.40E-04	4.4E-09	5.2E-05
Tank Group 04	PB-886-01	VOC	Cumene	98-82-8	D	Y		9.70E-04	4.85E-04	NC	7.9E-06
Tank Group 04	PB-886-01	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.80E-04		NC	NC
Tank Group 04	PB-886-01	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.70E-04		NC	NC
Tank Group 04	PB-886-01	VOC	Ethyl Benzene	100-41-4	D	Y		9.70E-04	4.85E-04	NC	3.2E-06
Tank Group 04	PB-886-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-886-01	VOC	Toluene	108-88-3	ID	Y		9.70E-04	4.85E-04	NC	6.4E-07
Tank Group 04	PB-886-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-886-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.90E-03	9.50E-04	NC	1.0E-04
Tank Group 04	PB-886-01	VOC	Xylenes (total)	1330-20-7	ID	Y		1.90E-03	9.50E-04	NC	6.2E-05
Tank Group 04	PB-886-01	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-01	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-01	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-01	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-886-01	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-01	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-01	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-01	INORG	Lead	7439-92-1	B2	Y	6.35E+00		6.35E+00	NC	NC
Tank Group 04	PB-886-02	VOC	Benzene	71-43-2	A	Y		4.60E-04	2.30E-04	4.2E-09	5.0E-05
Tank Group 04	PB-886-02	VOC	Cumene	98-82-8	D	Y		9.10E-04	4.55E-04	NC	7.4E-06
Tank Group 04	PB-886-02	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.60E-04		NC	NC
Tank Group 04	PB-886-02	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.10E-04		NC	NC
Tank Group 04	PB-886-02	VOC	Ethyl Benzene	100-41-4	D	Y		9.10E-04	4.55E-04	NC	3.0E-06
Tank Group 04	PB-886-02	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-886-02	VOC	Toluene	108-88-3	ID	Y		9.10E-04	4.55E-04	NC	6.0E-07
Tank Group 04	PB-886-02	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-886-02	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-886-02	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-886-02	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-02	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-02	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-886-02	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-02	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-886-02	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-02	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-886-02	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-886-02	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-02	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-02	INORG	Lead	7439-92-1	B2	Y	5.80E+00		5.80E+00	NC	NC
Tank Group 04	PB-886-03	VOC	Benzene	71-43-2	A	Y		5.10E-04	2.55E-04	4.7E-09	5.6E-05
Tank Group 04	PB-886-03	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-886-03	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.10E-04		NC	NC
Tank Group 04	PB-886-03	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-886-03	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-886-03	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-886-03	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-886-03	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-886-03	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-886-03	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-886-03	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-03	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-03	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-886-03	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-886-04	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-886-04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-886-04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-886-04	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-886-04	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-04	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-04	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-886-04	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-04	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-886-04	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-04	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-886-04	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-04	SVOC	Phenanthrene	85-01-8	D	Y	4.30E-02		4.30E-02	NC	NC
Tank Group 04	PB-886-04	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-04	INORG	Lead	7439-92-1	B2	Y	8.09E+00		8.09E+00	NC	NC
Tank Group 04	PB-886-05	VOC	Benzene	71-43-2	A	Y		4.20E-04	2.10E-04	3.8E-09	4.6E-05
Tank Group 04	PB-886-05	VOC	Cumene	98-82-8	D	Y		8.40E-04	4.20E-04	NC	6.9E-06
Tank Group 04	PB-886-05	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.20E-04		NC	NC
Tank Group 04	PB-886-05	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.40E-04		NC	NC
Tank Group 04	PB-886-05	VOC	Ethyl Benzene	100-41-4	D	Y		8.40E-04	4.20E-04	NC	2.8E-06
Tank Group 04	PB-886-05	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-886-05	VOC	Toluene	108-88-3	ID	Y		8.40E-04	4.20E-04	NC	5.5E-07
Tank Group 04	PB-886-05	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-886-05	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-886-05	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-886-05	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-05	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-05	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-05	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-05	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-05	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-05	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-886-05	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-886-05	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-05	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-05	INORG	Lead	7439-92-1	B2	Y	2.94E+00		2.94E+00	NC	NC
Tank Group 04	PB-886-06	VOC	Benzene	71-43-2	A	Y		5.40E-04	2.70E-04	4.9E-09	5.9E-05
Tank Group 04	PB-886-06	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-886-06	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-886-06	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-886-06	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-886-06	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-886-06	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-886-06	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-886-06	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-886-06	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-886-06	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-06	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-06	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-06	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-06	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-06	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-06	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-886-06	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-06	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-06	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-06	INORG	Lead	7439-92-1	B2	Y	2.26E+00		2.26E+00	NC	NC
Tank Group 04	PB-886-07	VOC	Benzene	71-43-2	A	Y		1.20E-03	6.00E-04	1.1E-08	1.3E-04
Tank Group 04	PB-886-07	VOC	Cumene	98-82-8	D	Y		2.40E-03	1.20E-03	NC	2.0E-05
Tank Group 04	PB-886-07	VOC	1,2-Dibromoethane	106-93-4	LC	N		1.20E-03		NC	NC
Tank Group 04	PB-886-07	VOC	1,2-Dichloroethane	107-06-2	B2	N		2.40E-03		NC	NC
Tank Group 04	PB-886-07	VOC	Ethyl Benzene	100-41-4	D	Y		2.40E-03	1.20E-03	NC	7.9E-06
Tank Group 04	PB-886-07	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		4.70E-03	2.35E-03	1.4E-09	5.1E-06
Tank Group 04	PB-886-07	VOC	Toluene	108-88-3	ID	Y		2.40E-03	1.20E-03	NC	1.6E-06
Tank Group 04	PB-886-07	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		4.70E-03	2.35E-03	NC	2.6E-04
Tank Group 04	PB-886-07	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		4.70E-03	2.35E-03	NC	2.6E-04
Tank Group 04	PB-886-07	VOC	Xylenes (total)	1330-20-7	ID	Y		4.70E-03	2.35E-03	NC	1.5E-04
Tank Group 04	PB-886-07	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-07	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-07	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-07	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-07	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-07	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-07	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-886-07	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-07	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-07	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-07	INORG	Lead	7439-92-1	B2	Y	2.62E+00		2.62E+00	NC	NC
Tank Group 04	PB-886-08	VOC	Benzene	71-43-2	A	Y		3.80E-02	1.90E-02	3.5E-07	4.1E-03
Tank Group 04	PB-886-08	VOC	Cumene	98-82-8	D	Y	1.50E-02		1.50E-02	NC	2.5E-04
Tank Group 04	PB-886-08	VOC	1,2-Dibromoethane	106-93-4	LC	N		3.80E-02		NC	NC
Tank Group 04	PB-886-08	VOC	1,2-Dichloroethane	107-06-2	B2	N		7.50E-02		NC	NC
Tank Group 04	PB-886-08	VOC	Ethyl Benzene	100-41-4	D	Y		7.50E-02	3.75E-02	NC	2.5E-04
Tank Group 04	PB-886-08	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.50E-01	7.50E-02	4.6E-08	1.6E-04
Tank Group 04	PB-886-08	VOC	Toluene	108-88-3	ID	Y		7.50E-02	3.75E-02	NC	4.9E-05
Tank Group 04	PB-886-08	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.50E-01	7.50E-02	NC	8.2E-03
Tank Group 04	PB-886-08	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.50E-01	7.50E-02	NC	8.2E-03
Tank Group 04	PB-886-08	VOC	Xylenes (total)	1330-20-7	ID	Y		1.50E-01	7.50E-02	NC	4.9E-03
Tank Group 04	PB-886-08	SVOC	Anthracene	120-12-7	ID	Y	3.20E-01		3.20E-01	NC	NC
Tank Group 04	PB-886-08	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-08	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-08	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-08	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-08	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-08	SVOC	Fluorene	86-73-7	D	Y	8.80E-01		8.80E-01	NC	NC
Tank Group 04	PB-886-08	SVOC	Naphthalene	91-20-3	C	Y	6.20E-02		6.20E-02	4.2E-07	1.2E-02
Tank Group 04	PB-886-08	SVOC	Phenanthrene	85-01-8	D	Y	1.70E+00		1.70E+00	NC	NC
Tank Group 04	PB-886-08	SVOC	Pyrene	129-00-0	NC	Y	1.00E-01		1.00E-01	NC	NC
Tank Group 04	PB-886-08	INORG	Lead	7439-92-1	B2	Y	8.19E+01		8.19E+01	NC	NC
Tank Group 04	PB-886-09	VOC	Benzene	71-43-2	A	Y		5.40E-04	2.70E-04	4.9E-09	5.9E-05
Tank Group 04	PB-886-09	VOC	Cumene	98-82-8	D	Y	7.15E-04		7.15E-04	NC	1.2E-05
Tank Group 04	PB-886-09	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.40E-04		NC	NC
Tank Group 04	PB-886-09	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-886-09	VOC	Ethyl Benzene	100-41-4	D	Y	3.90E-04		3.90E-04	NC	2.6E-06
Tank Group 04	PB-886-09	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.15E-03	1.08E-03	6.5E-10	2.3E-06
Tank Group 04	PB-886-09	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-886-09	INORG	Lead	7439-92-1	B2	Y	1.82E+00		1.82E+00	NC	NC
Tank Group 04	PB-886-10	VOC	Benzene	71-43-2	A	Y		6.00E-04	3.00E-04	5.5E-09	6.5E-05
Tank Group 04	PB-886-10	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-886-10	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.00E-04		NC	NC
Tank Group 04	PB-886-10	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-886-10	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-886-10	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-886-10	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-886-10	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	8.40E-04		8.40E-04	NC	9.2E-05
Tank Group 04	PB-886-10	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.40E-03		1.40E-03	NC	1.5E-04
Tank Group 04	PB-886-10	VOC	Xylenes (total)	1330-20-7	ID	Y	1.73E-03		1.73E-03	NC	1.1E-04
Tank Group 04	PB-886-10	SVOC	Anthracene	120-12-7	ID	Y	1.60E-01		1.60E-01	NC	NC
Tank Group 04	PB-886-10	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-10	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-10	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-10	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-10	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-10	SVOC	Fluorene	86-73-7	D	Y	3.50E-01		3.50E-01	NC	NC
Tank Group 04	PB-886-10	SVOC	Naphthalene	91-20-3	C	Y	4.10E-02		4.10E-02	2.8E-07	7.6E-03
Tank Group 04	PB-886-10	SVOC	Phenanthrene	85-01-8	D	Y	7.80E-01		7.80E-01	NC	NC
Tank Group 04	PB-886-10	SVOC	Pyrene	129-00-0	NC	Y	4.90E-02		4.90E-02	NC	NC
Tank Group 04	PB-886-10	INORG	Lead	7439-92-1	B2	Y	1.97E+00		1.97E+00	NC	NC
Tank Group 04	PB-886-11	VOC	Benzene	71-43-2	A	Y		5.90E-04	2.95E-04	5.4E-09	6.4E-05
Tank Group 04	PB-886-11	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-886-11	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.90E-04		NC	NC
Tank Group 04	PB-886-11	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-886-11	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-886-11	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.40E-03	1.20E-03	7.3E-10	2.6E-06
Tank Group 04	PB-886-11	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-886-11	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.40E-03		1.20E-03	NC	1.3E-04
Tank Group 04	PB-886-11	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.40E-03		1.20E-03	NC	1.3E-04
Tank Group 04	PB-886-11	VOC	Xylenes (total)	1330-20-7	ID	Y	2.40E-03		1.20E-03	NC	7.9E-05
Tank Group 04	PB-886-11	SVOC	Anthracene	120-12-7	ID	Y	1.10E-01		5.50E-02	NC	NC
Tank Group 04	PB-886-11	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-11	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-11	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-11	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-11	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-11	SVOC	Fluorene	86-73-7	D	Y	1.80E-01		9.00E-02	NC	NC
Tank Group 04	PB-886-11	SVOC	Naphthalene	91-20-3	C	Y	1.80E-01		9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-886-11	SVOC	Phenanthrene	85-01-8	D	Y	1.10E-01		5.50E-02	NC	NC
Tank Group 04	PB-886-11	SVOC	Pyrene	129-00-0	NC	Y	1.10E-01		5.50E-02	NC	NC
Tank Group 04	PB-886-11	INORG	Lead	7439-92-1	B2	Y	1.17E+01		1.17E+01	NC	NC
Tank Group 04	PB-886-12	VOC	Benzene	71-43-2	A	Y		7.20E-04	3.60E-04	6.6E-09	7.9E-05
Tank Group 04	PB-886-12	VOC	Cumene	98-82-8	D	Y		1.40E-03	7.00E-04	NC	1.1E-05
Tank Group 04	PB-886-12	VOC	1,2-Dibromoethane	106-93-4	LC	N		7.20E-04		NC	NC
Tank Group 04	PB-886-12	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.40E-03		NC	NC
Tank Group 04	PB-886-12	VOC	Ethyl Benzene	100-41-4	D	Y		1.40E-03	7.00E-04	NC	4.6E-06
Tank Group 04	PB-886-12	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.90E-03	1.45E-03	8.8E-10	3.2E-06
Tank Group 04	PB-886-12	VOC	Toluene	108-88-3	ID	Y		1.40E-03	7.00E-04	NC	9.2E-07
Tank Group 04	PB-886-12	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	1.10E-03		1.10E-03	NC	1.2E-04
Tank Group 04	PB-886-12	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.40E-03		1.40E-03	NC	1.5E-04
Tank Group 04	PB-886-12	VOC	Xylenes (total)	1330-20-7	ID	Y	1.94E-03		1.94E-03	NC	1.3E-04
Tank Group 04	PB-886-12	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-12	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-12	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-12	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-12	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-12	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-12	SVOC	Fluorene	86-73-7	D	Y	4.40E-02		4.40E-02	NC	NC
Tank Group 04	PB-886-12	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-12	SVOC	Phenanthrene	85-01-8	D	Y	1.20E-01		1.20E-01	NC	NC
Tank Group 04	PB-886-12	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-12	INORG	Lead	7439-92-1	B2	Y	5.66E+00		5.66E+00	NC	NC
Tank Group 04	PB-886-13	VOC	Benzene	71-43-2	A	Y		1.10E-03	5.50E-04	1.0E-08	1.2E-04
Tank Group 04	PB-886-13	VOC	Cumene	98-82-8	D	Y		2.10E-03	1.05E-03	NC	1.7E-05
Tank Group 04	PB-886-13	VOC	1,2-Dibromoethane	106-93-4	LC	N		1.10E-03		NC	NC
Tank Group 04	PB-886-13	VOC	1,2-Dichloroethane	107-06-2	B2	N		2.10E-03		NC	NC
Tank Group 04	PB-886-13	VOC	Ethyl Benzene	100-41-4	D	Y		2.10E-03	1.05E-03	NC	6.9E-06
Tank Group 04	PB-886-13	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		4.30E-03	2.15E-03	1.3E-09	4.7E-06
Tank Group 04	PB-886-13	VOC	Toluene	108-88-3	ID	Y		2.10E-03	1.05E-03	NC	1.4E-06
Tank Group 04	PB-886-13	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	4.30E-03		2.15E-03	NC	2.3E-04
Tank Group 04	PB-886-13	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	4.30E-03		2.15E-03	NC	2.3E-04
Tank Group 04	PB-886-13	VOC	Xylenes (total)	1330-20-7	ID	Y	4.30E-03		2.15E-03	NC	1.4E-04
Tank Group 04	PB-886-13	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-13	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-13	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-13	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-13	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-13	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-13	SVOC	Fluorene	86-73-7	D	Y	1.90E-01		9.50E-02	NC	NC
Tank Group 04	PB-886-13	SVOC	Naphthalene	91-20-3	C	Y	1.90E-01		9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-13	SVOC	Phenanthrene	85-01-8	D	Y	1.10E-01		5.50E-02	NC	NC
Tank Group 04	PB-886-13	SVOC	Pyrene	129-00-0	NC	Y	1.10E-01		5.50E-02	NC	NC
Tank Group 04	PB-886-13	INORG	Lead	7439-92-1	B2	Y	3.04E+00		3.04E+00	NC	NC
Tank Group 04	PB-886-14	VOC	Benzene	71-43-2	A	Y		7.20E-04	3.60E-04	6.6E-09	7.9E-05
Tank Group 04	PB-886-14	VOC	Cumene	98-82-8	D	Y		1.45E-03	7.25E-04	NC	1.2E-05
Tank Group 04	PB-886-14	VOC	1,2-Dibromoethane	106-93-4	LC	N		7.20E-04		NC	NC
Tank Group 04	PB-886-14	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.45E-03		NC	NC
Tank Group 04	PB-886-14	VOC	Ethyl Benzene	100-41-4	D	Y		1.45E-03	7.25E-04	NC	4.7E-06
Tank Group 04	PB-886-14	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.85E-03	1.43E-03	8.7E-10	3.1E-06
Tank Group 04	PB-886-14	VOC	Toluene	108-88-3	ID	Y		1.45E-03	7.25E-04	NC	9.5E-07
Tank Group 04	PB-886-14	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.85E-03		1.43E-03	NC	1.6E-04
Tank Group 04	PB-886-14	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.85E-03		1.43E-03	NC	1.6E-04
Tank Group 04	PB-886-14	VOC	Xylenes (total)								

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-886-15	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-15	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-15	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-15	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-886-15	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-15	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-15	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-15	INORG	Lead	7439-92-1	B2	Y	2.56E+00		2.56E+00	NC	NC
Tank Group 04	PB-886-16	VOC	Benzene	71-43-2	A	Y		4.30E-04	2.15E-04	3.9E-09	4.7E-05
Tank Group 04	PB-886-16	VOC	Cumene	98-82-8	D	Y		8.70E-04	4.35E-04	NC	7.1E-06
Tank Group 04	PB-886-16	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.30E-04		NC	NC
Tank Group 04	PB-886-16	VOC	1,2-Dichloroethane	107-06-2	B2	N		8.70E-04		NC	NC
Tank Group 04	PB-886-16	VOC	Ethyl Benzene	100-41-4	D	Y		8.70E-04	4.35E-04	NC	2.8E-06
Tank Group 04	PB-886-16	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.70E-03	8.50E-04	5.2E-10	1.9E-06
Tank Group 04	PB-886-16	VOC	Toluene	108-88-3	ID	Y		8.70E-04	4.35E-04	NC	5.7E-07
Tank Group 04	PB-886-16	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-886-16	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.70E-03	8.50E-04	NC	9.3E-05
Tank Group 04	PB-886-16	VOC	Xylenes (total)	1330-20-7	ID	Y		1.70E-03	8.50E-04	NC	5.6E-05
Tank Group 04	PB-886-16	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-16	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-16	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-16	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-16	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-16	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-16	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-886-16	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-886-16	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-16	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-16	INORG	Lead	7439-92-1	B2	Y	1.82E+00		1.82E+00	NC	NC
Tank Group 04	PB-886-17	VOC	Benzene	71-43-2	A	Y		5.20E-04	2.60E-04	4.7E-09	5.7E-05
Tank Group 04	PB-886-17	VOC	Cumene	98-82-8	D	Y	1.20E-04		1.20E-04	NC	2.0E-06
Tank Group 04	PB-886-17	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.20E-04		NC	NC
Tank Group 04	PB-886-17	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-886-17	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-886-17	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-886-17	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-886-17	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.50E-03		2.50E-03	NC	2.7E-04
Tank Group 04	PB-886-17	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	8.20E-04		8.20E-04	NC	9.0E-05
Tank Group 04	PB-886-17	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-886-17	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-17	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-17	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-17	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-17	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-17	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-17	SVOC	Fluorene	86-73-7	D	Y	4.60E-02		4.60E-02	NC	NC
Tank Group 04	PB-886-17	SVOC	Naphthalene	91-20-3	C	Y	9.20E-02		9.20E-02	6.2E-07	1.7E-02
Tank Group 04	PB-886-17	SVOC	Phenanthrene	85-01-8	D	Y	1.30E-01		1.30E-01	NC	NC
Tank Group 04	PB-886-17	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-17	INORG	Lead	7439-92-1	B2	Y	1.80E+00		1.80E+00	NC	NC
Tank Group 04	PB-886-18	VOC	Benzene	71-43-2	A	Y		5.70E-04	2.85E-04	5.2E-09	6.2E-05
Tank Group 04	PB-886-18	VOC	Cumene	98-82-8	D	Y		1.10E-03	5.50E-04	NC	9.0E-06
Tank Group 04	PB-886-18	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.70E-04		NC	NC
Tank Group 04	PB-886-18	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-886-18	VOC	Ethyl Benzene	100-41-4	D	Y		1.10E-03	5.50E-04	NC	3.6E-06
Tank Group 04	PB-886-18	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-886-18	VOC	Toluene	108-88-3	ID	Y		1.10E-03	5.50E-04	NC	7.2E-07
Tank Group 04	PB-886-18	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-886-18	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.30E-03	1.15E-03	NC	1.3E-04
Tank Group 04	PB-886-18	VOC	Xylenes (total)	1330-20-7	ID	Y		2.30E-03	1.15E-03	NC	7.5E-05
Tank Group 04	PB-886-18	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-18	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	2.20E-02		2.20E-02	NC	NC
Tank Group 04	PB-886-18	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-18	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		3.60E-02	3.60E-02	NC	NC
Tank Group 04	PB-886-18	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		2.70E-02	2.70E-02	NC	NC
Tank Group 04	PB-886-18	SVOC	Chrysene	218-01-9	B2	Y		9.30E-02	9.30E-02	NC	NC
Tank Group 04	PB-886-18	SVOC	Fluorene	86-73-7	D	Y		3.00E-02	3.00E-02	NC	NC
Tank Group 04	PB-886-18	SVOC	Naphthalene	91-20-3	C	Y		1.40E-01	1.40E-01	9.5E-07	2.6E-02
Tank Group 04	PB-886-18	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	1.20E-01	NC	NC
Tank Group 04	PB-886-18	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	1.10E-01	NC	NC
Tank Group 04	PB-886-18	INORG	Lead	7439-92-1	B2	Y	1.92E+00		1.92E+00	NC	NC
Tank Group 04	PB-886-19	VOC	Benzene	71-43-2	A	Y		6.60E-04	3.30E-04	6.0E-09	7.2E-05
Tank Group 04	PB-886-19	VOC	Cumene	98-82-8	D	Y		1.30E-03	6.50E-04	NC	1.1E-05
Tank Group 04	PB-886-19	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.60E-04		NC	NC
Tank Group 04	PB-886-19	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.30E-03		NC	NC
Tank Group 04	PB-886-19	VOC	Ethyl Benzene	100-41-4	D	Y		1.30E-03	6.50E-04	NC	4.3E-06
Tank Group 04	PB-886-19	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.60E-03	1.30E-03	7.9E-10	2.8E-06
Tank Group 04	PB-886-19	VOC	Toluene	108-88-3	ID	Y		1.30E-03	6.50E-04	NC	8.5E-07
Tank Group 04	PB-886-19	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.60E-03	1.30E-03	NC	1.4E-04
Tank Group 04	PB-886-19	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.60E-03	1.30E-03	NC	1.4E-04
Tank Group 04	PB-886-19	VOC	Xylenes (total)	1330-20-7	ID	Y		2.60E-03	1.30E-03	NC	8.5E-05
Tank Group 04	PB-886-19	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-19	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-19	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-19	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-19	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-19	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-19	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-886-19	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-19	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-19	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-19	INORG	Lead	7439-92-1	B2	Y	2.28E+00		2.28E+00	NC	NC
Tank Group 04	PB-886-20	VOC	Benzene	71-43-2	A	Y		6.30E-04	3.15E-04	5.7E-09	6.9E-05
Tank Group 04	PB-886-20	VOC	Cumene	98-82-8	D	Y		1.20E-03	6.00E-04	NC	9.8E-06
Tank Group 04	PB-886-20	VOC	1,2-Dibromoethane	106-93-4	LC	N		6.30E-04		NC	NC
Tank Group 04	PB-886-20	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.20E-03		NC	NC
Tank Group 04	PB-886-20	VOC	Ethyl Benzene	100-41-4	D	Y		1.20E-03	6.00E-04	NC	3.9E-06
Tank Group 04	PB-886-20	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.50E-03	1.25E-03	7.6E-10	2.7E-06
Tank Group 04	PB-886-20	VOC	Toluene	108-88-3	ID	Y		1.20E-03	6.00E-04	NC	7.9E-07
Tank Group 04	PB-886-20	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.50E-03	1.25E-03	NC	1.4E-04
Tank Group 04	PB-886-20	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.50E-03	1.25E-03	NC	1.4E-04
Tank Group 04	PB-886-20	VOC	Xylenes (total)	1330-20-7	ID	Y		2.50E-03	1.25E-03	NC	8.2E-05
Tank Group 04	PB-886-20	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-20	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-20	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-20	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-886-21	VOC	Toluene	108-88-3	ID	Y		8.90E-04	4.45E-04	NC	5.8E-07
Tank Group 04	PB-886-21	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-886-21	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-886-21	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-886-21	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-21	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-21	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-21	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-21	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-21	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-21	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-886-21	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-21	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-21	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-21	INORG	Lead	7439-92-1	B2	Y	1.82E+00		1.82E+00	NC	NC
Tank Group 04	PB-886-22	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-886-22	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-886-22	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-886-22	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-886-22	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-886-22	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-886-22	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-886-22	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-886-22	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-886-22	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-886-22	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-22	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-22	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-22	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-22	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-22	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-22	SVOC	Fluorene	86-73-7	D	Y		1.90E-01	9.50E-02	NC	NC
Tank Group 04	PB-886-22	SVOC	Naphthalene	91-20-3	C	Y		1.90E-01	9.50E-02	6.4E-07	1.8E-02
Tank Group 04	PB-886-22	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-22	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-22	INORG	Lead	7439-92-1	B2	Y	2.06E+00		2.06E+00	NC	NC
Tank Group 04	PB-886-23	VOC	Benzene	71-43-2	A	Y		5.00E-04	2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-886-23	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-886-23	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.00E-04		NC	NC
Tank Group 04	PB-886-23	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-886-23	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-886-23	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.00E-03	1.00E-03	6.1E-10	2.2E-06
Tank Group 04	PB-886-23	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-886-23	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-886-23	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.00E-03	1.00E-03	NC	1.1E-04
Tank Group 04	PB-886-23	VOC	Xylenes (total)	1330-20-7	ID	Y		2.00E-03	1.00E-03	NC	6.5E-05
Tank Group 04	PB-886-23	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-23	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-23	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-23	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-23	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-23	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-23	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-886-23	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-886-23	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-23	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-23	INORG	Lead	7439-92-1	B2	Y	1.95E+00		1.95E+00	NC	NC
Tank Group 04	PB-886-24	VOC	Benzene	71-43-2	A	Y		5.30E-04	2.65E-04	4.8E-09	5.8E-05
Tank Group 04	PB-886-24	VOC	Cumene	98-82-8	D	Y		1.00E-03	5.00E-04	NC	8.2E-06
Tank Group 04	PB-886-24	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.30E-04		NC	NC
Tank Group 04	PB-886-24	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.00E-03		NC	NC
Tank Group 04	PB-886-24	VOC	Ethyl Benzene	100-41-4	D	Y		1.00E-03	5.00E-04	NC	3.3E-06
Tank Group 04	PB-886-24	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.10E-03	1.05E-03	6.4E-10	2.3E-06
Tank Group 04	PB-886-24	VOC	Toluene	108-88-3	ID	Y		1.00E-03	5.00E-04	NC	6.5E-07
Tank Group 04	PB-886-24	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-886-24	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		2.10E-03	1.05E-03	NC	1.1E-04
Tank Group 04	PB-886-24	VOC	Xylenes (total)	1330-20-7	ID	Y		2.10E-03	1.05E-03	NC	6.9E-05
Tank Group 04	PB-886-24	SVOC	Anthracene	120-12-7	ID	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-24	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-24	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-886-24	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-24	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.60E-01	8.00E-02	NC	NC
Tank Group 04	PB-886-24	SVOC	Chrysene	218-01-9	B2	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-24	SVOC	Fluorene	86-73-7	D	Y		2.00E-01	1.00E-01	NC	NC
Tank Group 04	PB-886-24	SVOC	Naphthalene	91-20-3	C	Y		2.00E-01	1.00E-01	6.8E-07	1.9E-02
Tank Group 04	PB-886-24	SVOC	Phenanthrene	85-01-8	D	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-24	SVOC	Pyrene	129-00-0	NC	Y		1.20E-01	6.00E-02	NC	NC
Tank Group 04	PB-886-24	INORG	Lead	7439-92-1	B2	Y	4.51E+00		4.51E+00	NC	NC
Tank Group 04	PB-886-25	VOC	Benzene	71-43-2	A	Y		4.50E-04	2.25E-04	4.1E-09	4.9E-05
Tank Group 04	PB-886-25	VOC	Cumene	98-82-8	D	Y		9.00E-04	4.50E-04	NC	7.4E-06
Tank Group 04	PB-886-25	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.50E-04		NC	NC
Tank Group 04	PB-886-25	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.00E-04		NC	NC
Tank Group 04	PB-886-25	VOC	Ethyl Benzene	100-41-4	D	Y		9.00E-04	4.50E-04	NC	2.9E-06
Tank Group 04	PB-886-25	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.80E-03	9.00E-04	5.5E-10	2.0E-06
Tank Group 04	PB-886-25	VOC	Toluene	108-88-3	ID	Y		9.00E-04	4.50E-04	NC	5.9E-07
Tank Group 04	PB-886-25	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-886-25	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.80E-03	9.00E-04	NC	9.8E-05
Tank Group 04	PB-886-25	VOC	Xylenes (total)	1330-20-7	ID	Y		1.80E-03	9.00E-04	NC	5.9E-05
Tank Group 04	PB-886-25	SVOC	Anthracene	120-12-7	ID	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-25	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-25	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-25	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-25	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.50E-01	7.50E-02	NC	NC
Tank Group 04	PB-886-25	SVOC	Chrysene	218-01-9	B2	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-25	SVOC	Fluorene	86-73-7	D	Y		1.80E-01	9.00E-02	NC	NC
Tank Group 04	PB-886-25	SVOC	Naphthalene	91-20-3	C	Y		1.80E-01	9.00E-02	6.1E-07	1.7E-02
Tank Group 04	PB-886-25	SVOC	Phenanthrene	85-01-8	D	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-25	SVOC	Pyrene	129-00-0	NC	Y		1.10E-01	5.50E-02	NC	NC
Tank Group 04	PB-886-25	INORG	Lead	7439-92-1	B2	Y	1.81E+00		1.81E+00	NC	NC
Tank Group 04	PB-886-26	VOC	Benzene	71-43-2	A	Y	2.50E-04		2.50E-04	4.6E-09	5.5E-05
Tank Group 04	PB-886-26	VOC	Cumene	98-82-8	D	Y	8.90E-03		8.90E-03	NC	1.5E-04
Tank Group 04	PB-886-26	VOC	1,2-Dibromoethane	106-93-4	LC	N		5.70E-04		NC	NC
Tank Group 04	PB-886-26	VOC	1,2-Dichloroethane	107-06-2	B2	N		1.10E-03		NC	NC
Tank Group 04	PB-886-26	VOC	Ethyl Benzene	100-41-4	D	Y	3.20E-03		3.20E-03	NC	2.1E-05
Tank Group 04	PB-886-26	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		2.30E-03	1.15E-03	7.0E-10	2.5E-06
Tank Group 04	PB-886-26	VOC	Toluene	108-88-3	ID	Y	1.20E-03		1.20E-03	NC	1.6E-06
Tank Group 04											

Attachment 8

Table 2

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Soil
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Soil	Max Detect from All Depths (mg/kg)	Max Limit from All Depths (mg/kg)	Exposure Concentration (mg/kg)	Routine Worker Vapor Intrusion	
										Risk	HQ
Tank Group 04	PB-886-26	INORG	Lead	7439-92-1	B2	Y	2.15E+00		2.15E+00	NC	NC
Tank Group 04	PB-886-27	VOC	Benzene	71-43-2	A	Y		4.70E-04	2.35E-04	4.3E-09	5.1E-05
Tank Group 04	PB-886-27	VOC	Cumene	98-82-8	D	Y	2.10E-04		2.10E-04	NC	3.4E-06
Tank Group 04	PB-886-27	VOC	1,2-Dibromoethane	106-93-4	LC	N		4.70E-04		NC	NC
Tank Group 04	PB-886-27	VOC	1,2-Dichloroethane	107-06-2	B2	N		9.50E-04		NC	NC
Tank Group 04	PB-886-27	VOC	Ethyl Benzene	100-41-4	D	Y	1.80E-04		1.80E-04	NC	1.2E-06
Tank Group 04	PB-886-27	VOC	Methyl tert-butyl ether	1634-04-4	C	Y		1.90E-03	9.50E-04	5.8E-10	2.1E-06
Tank Group 04	PB-886-27	VOC	Toluene	108-88-3	ID	Y		9.50E-04	4.75E-04	NC	6.2E-07
Tank Group 04	PB-886-27	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	5.10E-02		5.10E-02	NC	5.6E-03
Tank Group 04	PB-886-27	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y		1.20E-01	6.00E-02	NC	6.5E-03
Tank Group 04	PB-886-27	VOC	Xylenes (total)	1330-20-7	ID	Y	1.07E-03		1.07E-03	NC	7.0E-05
Tank Group 04	PB-886-27	SVOC	Anthracene	120-12-7	ID	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-27	SVOC	Benzo(a)anthracene	56-55-3	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-27	SVOC	Benzo(a)pyrene	50-32-8	HC	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-27	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-27	SVOC	Benzo(g,h,i)perylene	191-24-2	D	Y		1.40E-01	7.00E-02	NC	NC
Tank Group 04	PB-886-27	SVOC	Chrysene	218-01-9	B2	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-27	SVOC	Fluorene	86-73-7	D	Y		1.70E-01	8.50E-02	NC	NC
Tank Group 04	PB-886-27	SVOC	Naphthalene	91-20-3	C	Y		1.70E-01	8.50E-02	5.8E-07	1.6E-02
Tank Group 04	PB-886-27	SVOC	Phenanthrene	85-01-8	D	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-27	SVOC	Pyrene	129-00-0	NC	Y		1.00E-01	5.00E-02	NC	NC
Tank Group 04	PB-886-27	INORG	Lead	7439-92-1	B2	Y	2.28E+00		2.28E+00	NC	NC

Notes:

Only constituents detected in each area are shown.

Single-chemical cancer risk and hazard quotient (HQ) estimates in excess of PADEP's thresholds for cumulative cancer risk and HI of 1E-4 and 1, respectively, are shaded and bold.

Single-chemical cancer risk and HQ estimates in excess of 1/10 PADEP's thresholds for cumulative cancer risk or HI of 1E-4 and 1, respectively, are italic and bold

Where a chemical is non-detect at a location but detected within the media at the Site, half of the analytical limit is used as the exposure concentration

NC - Risk and HQ estimates were not calculated for detected chemicals with inadequate toxicity or physical/chemical parameters or where chemical concentrations were non-detect

The concentrations for the Xylene isomers (m/p and o) were summed to Xylenes (total).

Chem Group - chemical group

Carc Class - USEPA Weight-of-Evidence Cancer Classification

Attachment 8

Table 3

Upper-Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Groundwater
Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Chem Group	Chemical	CASRN	Carc Class	Max Detected (mg/L)	Routine Worker				Maintenance Worker		Construction Worker		Off-Site Resident				Resident	
						Vapor Intrusion		Outdoor Air Inhalation		Groundwater Contact		Groundwater Contact		Vapor Intrusion		Outdoor Air Inhalation		Nonpotable Use	
						Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ
Tank Group 04	VOC	Benzene	71-43-2	A	5.80E-01	1.3E-06	1.5E-02	8.8E-09	1.1E-04	1.4E-06	4.2E-02	1.4E-07	1.5E-02	2.0E-05	2.4E-01	3.8E-08	4.4E-04	2.0E-05	9.4E-02
Tank Group 04	VOC	Cumene	98-82-8	D	7.50E-02	NC	1.2E-04	NC	8.3E-07	NC	2.5E-04	NC	2.5E-04	NC	1.9E-03	NC	3.4E-06	NC	2.0E-04
Tank Group 04	VOC	Ethyl Benzene	100-41-4	D	1.10E-01	NC	7.2E-05	NC	5.0E-07	NC	4.1E-04	NC	2.8E-04	NC	1.1E-03	NC	2.1E-06	NC	5.4E-03
Tank Group 04	VOC	Toluene	108-88-3	ID	1.10E-02	NC	1.6E-06	NC	1.1E-08	NC	2.4E-05	NC	5.4E-06	NC	2.5E-05	NC	4.6E-08	NC	4.5E-05
Tank Group 04	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	5.40E-02	NC	5.4E-04	NC	3.8E-06	NC	1.2E-03	NC	3.6E-04	NC	8.6E-03	NC	1.6E-05	NC	6.2E-04
Tank Group 04	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.30E-02	NC	1.4E-04	NC	9.8E-07	NC	2.9E-04	NC	8.7E-05	NC	2.2E-03	NC	4.1E-06	NC	1.5E-04
Tank Group 04	VOC	Xylenes (total)	1330-20-7	ID	1.86E-01	NC	1.4E-03	NC	9.6E-06	NC	2.8E-03	NC	1.1E-03	NC	2.2E-02	NC	4.0E-05	NC	5.1E-03
Tank Group 04	SVOC	Anthracene	120-12-7	ID	1.10E-04	NC	NC	NC	NC	NC	1.9E-09	NC	5.7E-10	NC	NC	NC	NC	NC	4.7E-08
Tank Group 04	SVOC	Benzo(a)anthracene	56-55-3	B2	1.80E-04	NC	NC	NC	NC	1.3E-11	NC	1.3E-12	NC	NC	NC	NC	NC	NC	1.7E-08
Tank Group 04	SVOC	Fluorene	86-73-7	D	9.20E-04	NC	NC	NC	NC	NC	1.2E-07	NC	1.2E-08	NC	NC	NC	NC	NC	9.5E-07
Tank Group 04	SVOC	Naphthalene	91-20-3	C	9.40E-03	3.1E-08	8.5E-04	2.2E-10	6.2E-06	5.0E-08	3.4E-03	5.0E-09	3.4E-03	5.3E-07	1.4E-02	9.7E-10	2.6E-05	2.2E-07	2.4E-03
Tank Group 04	SVOC	Phenanthrene	85-01-8	D	2.50E-04	NC	NC	NC	NC	NC	4.3E-08	NC	4.3E-09	NC	NC	NC	NC	NC	3.4E-07
Tank Group 04	SVOC	Pyrene	129-00-0	NC	6.00E-05	NC	NC	NC	NC	NC	1.0E-08	NC	1.0E-09	NC	NC	NC	NC	NC	1.2E-07

Notes:

Only constituents detected in each area are shown.

Single-chemical cancer risk and hazard quotient (HQ) estimates in excess of PADEP's thresholds for cumulative cancer risk and HI of 1E-4 and 1, respectively, are shaded and bold.

Single-chemical cancer risk and HQ estimates in excess of 1/10 PADEP's thresholds for cumulative cancer risk or HI of 1E-4 and 1, respectively, are italic and bold

NC - Risk and HQ estimates were not calculated for detected chemicals with inadequate toxicity or physical/chemical parameters or where chemical concentrations were non-detect

The concentrations for the Xylene isomers (m/p and o) were summed to Xylenes (total).

Chem Group - chemical group

Carc Class - USEPA Weight-of-Evidence Cancer Classification

Attachment 8

Table 4

Location-Specific Upper Bound Single-Chemical Cancer Risk and Noncancer Hazard Quotient (HQ) for Receptor Exposure to Groundwater
 Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Area	Location	Chem Group	Chemical	CASRN	Carc Class	Detected in Groundwater	Max Detect (mg/L)	Max Limit (mg/L)	Exposure Concentration (mg/L)	Routine Worker			Maintenance Worker		Construction Worker		Off-Site Resident				Resident				
										Vapor Intrusion			Outdoor Air Inhalation		Groundwater Contact		Groundwater Contact		Vapor Intrusion		Outdoor Air Inhalation		Nonpoint Use		
										Risk	HQ	Occ Ratio	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk	HQ	Risk
Tank Group 04	S-219	VOC	Benzene	71-43-2	A	Y	5.00E-04	2.50E-04	5.4E-10	6.5E-06	2.66E-06	3.8E-12	4.5E-08	5.9E-10	1.8E-05	5.9E-11	6.3E-06	8.8E-09	1.0E-04	1.6E-11	1.9E-07	8.4E-09	4.1E-05		
Tank Group 04	S-219	VOC	Cumene	98-82-8	D	Y	2.80E-04	5.00E-04	NC	4.4E-07	3.16E-09	NC	3.1E-09	NC	9.4E-07	NC	9.3E-07	NC	7.0E-06	NC	1.3E-08	NC	7.6E-07		
Tank Group 04	S-219	VOC	1,2-Dibromoethane	106-93-4	LC	Y	1.00E-05	5.00E-06	3.7E-10	1.9E-07	2.18E-08	2.6E-12	1.4E-09	4.4E-10	5.5E-07	4.4E-11	5.5E-07	6.3E-09	3.1E-06	1.1E-11	5.7E-09	2.9E-09	7.4E-07		
Tank Group 04	S-219	VOC	1,2-Dichloroethane	107-06-2	B2	Y	5.00E-04	2.50E-04	1.2E-09	1.9E-05	1.47E-07	9.0E-12	1.4E-07	1.3E-09	4.9E-05	1.3E-10	5.2E-06	2.1E-08	3.0E-04	3.9E-11	5.8E-07	7.6E-09	1.1E-05		
Tank Group 04	S-219	VOC	Ethyl Benzene	100-41-4	D	Y	5.00E-04	2.50E-04	NC	1.6E-07	1.99E-07	NC	1.1E-09	NC	9.4E-07	NC	6.3E-07	NC	2.6E-06	NC	4.8E-09	NC	1.2E-05		
Tank Group 04	S-219	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	1.00E-03	5.00E-04	2.0E-11	7.4E-08	1.60E-09	1.5E-13	5.3E-10	2.8E-11	2.6E-07	2.8E-12	2.6E-07	3.4E-10	1.2E-06	6.5E-13	2.2E-09	2.4E-10	1.1E-06		
Tank Group 04	S-219	VOC	Toluene	108-88-3	ID	Y	7.50E-04	3.75E-04	NC	5.3E-08	NC	NC	3.7E-10	NC	8.2E-07	NC	1.8E-07	NC	8.4E-07	NC	1.6E-09	NC	1.5E-06		
Tank Group 04	S-219	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	2.50E-03	1.25E-03	NC	1.3E-05	2.65E-08	NC	8.8E-08	NC	2.8E-05	NC	8.4E-06	NC	2.0E-04	NC	3.7E-07	NC	1.4E-05		
Tank Group 04	S-219	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	2.50E-03	1.25E-03	NC	1.3E-05	2.82E-08	NC	9.4E-08	NC	2.8E-05	NC	8.3E-06	NC	2.1E-04	NC	3.9E-07	NC	1.4E-05		
Tank Group 04	S-219	VOC	Xylenes (total)	1330-20-7	ID	Y	1.00E-03	5.00E-04	NC	3.7E-06	6.35E-07	NC	2.6E-08	NC	7.6E-06	NC	2.9E-06	NC	5.8E-05	NC	1.1E-07	NC	1.4E-05		
Tank Group 04	S-219	SVOC	Anthracene	120-12-7	ID	Y	1.00E-04	5.00E-05	NC	NC	1.36E-09	NC	NC	NC	8.6E-10	NC	2.6E-10	NC	NC	NC	NC	NC	2.1E-08		
Tank Group 04	S-219	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.80E-04	5.00E-05	NC	NC	NC	NC	NC	NC	1.3E-11	NC	1.3E-12	NC	NC	NC	NC	NC	1.7E-08	NC	
Tank Group 04	S-219	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.00E-04	5.00E-05	NC	NC	NC	NC	NC	NC	3.7E-11	8.6E-07	3.7E-12	8.6E-07	NC	NC	NC	NC	5.0E-08	1.1E-04	
Tank Group 04	S-219	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	5.00E-05	2.50E-05	NC	NC	NC	NC	NC	NC	1.8E-12	NC	1.8E-13	NC	NC	NC	NC	NC	1.6E-09	NC	
Tank Group 04	S-219	SVOC	Benzo(g,h)perylene	191-24-2	D	Y	1.00E-04	5.00E-05	NC	NC	NC	NC	NC	NC	8.6E-09	NC	8.6E-10	NC	NC	NC	NC	NC	1.1E-07	NC	
Tank Group 04	S-219	SVOC	Chrysene	218-01-9	B2	Y	1.00E-04	5.00E-05	NC	NC	NC	NC	NC	NC	3.7E-14	NC	3.7E-15	NC	NC	NC	NC	NC	3.2E-11	NC	
Tank Group 04	S-219	SVOC	Fluorene	86-73-7	D	Y	1.00E-04	5.00E-05	NC	NC	NC	NC	NC	NC	6.4E-09	NC	6.4E-10	NC	NC	NC	NC	NC	5.2E-08	NC	
Tank Group 04	S-219	SVOC	Naphthalene	91-20-3	C	Y	1.00E-04	5.00E-05	1.7E-10	4.5E-06	1.19E-07	1.2E-12	3.3E-08	2.7E-10	1.8E-05	2.7E-11	1.8E-05	2.8E-09	7.4E-05	5.2E-12	1.4E-07	1.2E-09	1.3E-05	NC	
Tank Group 04	S-219	SVOC	Phenanthrene	85-01-8	D	Y	5.00E-05	2.50E-05	NC	NC	NC	NC	NC	NC	4.3E-09	NC	4.3E-10	NC	NC	NC	NC	NC	3.4E-08	NC	
Tank Group 04	S-219	SVOC	Pyrene	129-00-0	NC	Y	1.00E-04	5.00E-05	NC	NC	NC	NC	NC	NC	8.6E-09	NC	8.6E-10	NC	NC	NC	NC	NC	1.0E-07	NC	
Tank Group 04	S-219	INORG	Lead	7439-92-1	B2	Y	1.00E-03	5.00E-04	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	1.0E-07	
Tank Group 04	TG04-MW-01	VOC	Benzene	71-43-2	A	Y	5.80E-01	2.50E-03	5.80E-01	1.3E-06	1.5E-02	6.17E-03	8.8E-09	1.1E-04	1.4E-06	4.2E-02	1.4E-07	1.5E-02	2.0E-05	2.4E-01	3.8E-08	4.4E-04	2.0E-05	9.4E-02	
Tank Group 04	TG04-MW-01	VOC	Cumene	98-82-8	D	Y	7.50E-02	2.50E-03	7.50E-02	NC	1.2E-04	8.46E-07	NC	8.3E-07	NC	2.5E-04	NC	2.5E-04	NC	1.9E-03	NC	3.4E-06	NC	2.0E-04	
Tank Group 04	TG04-MW-01	VOC	1,2-Dibromoethane	106-93-4	LC	Y	1.00E-05	5.00E-06	3.7E-10	1.9E-07	2.18E-08	2.6E-12	1.4E-09	4.4E-10	5.5E-07	4.4E-11	5.5E-07	6.3E-09	3.1E-06	1.1E-11	5.7E-09	2.9E-09	7.4E-07	NC	
Tank Group 04	TG04-MW-01	VOC	1,2-Dichloroethane	107-06-2	B2	Y	2.50E-03	1.25E-03	6.2E-09	9.6E-05	7.36E-07	4.5E-11	6.9E-07	6.7E-09	2.4E-04	6.7E-10	2.6E-05	1.0E-07	1.5E-03	1.9E-10	2.9E-06	3.8E-08	5.6E-05	NC	
Tank Group 04	TG04-MW-01	VOC	Ethyl Benzene	100-41-4	D	Y	1.10E-01	2.50E-03	1.10E-01	NC	7.2E-05	8.76E-05	NC	5.0E-07	NC	4.1E-04	NC	2.8E-04	NC	1.1E-03	NC	2.1E-06	NC	5.4E-03	
Tank Group 04	TG04-MW-01	VOC	Methyl tert-butyl ether	1634-04-4	C	Y	5.00E-03	2.50E-03	1.0E-10	3.7E-07	7.98E-09	7.4E-13	2.7E-09	1.4E-10	1.3E-06	1.4E-11	1.3E-06	1.7E-09	5.9E-06	3.2E-12	1.1E-08	1.2E-09	5.6E-06	NC	
Tank Group 04	TG04-MW-01	VOC	Toluene	108-88-3	ID	Y	1.10E-02	3.80E-03	1.10E-02	NC	1.6E-06	NC	NC	NC	1.1E-08	NC	2.4E-05	NC	5.4E-06	NC	4.6E-08	NC	4.5E-05	NC	
Tank Group 04	TG04-MW-01	VOC	1,2,4-Trimethylbenzene	95-63-6	ID	Y	5.40E-02	1.20E-02	5.40E-02	NC	5.4E-04	1.14E-06	NC	3.8E-06	NC	1.2E-03	NC	3.6E-04	NC	8.6E-03	NC	1.6E-05	NC	6.2E-04	
Tank Group 04	TG04-MW-01	VOC	1,3,5-Trimethylbenzene	108-67-8	ID	Y	1.30E-02	1.20E-02	1.30E-02	NC	1.4E-04	2.93E-07	NC	9.8E-07	NC	2.9E-04	NC	8.7E-05	NC	2.2E-03	NC	4.1E-06	NC	1.5E-04	
Tank Group 04	TG04-MW-01	VOC	Xylenes (total)	1330-20-7	ID	Y	1.85E-01	5.00E-03	1.85E-01	NC	1.4E-03	2.36E-04	NC	9.6E-06	NC	2.8E-03	NC	1.1E-03	NC	2.8E-02	NC	4.0E-05	NC	5.1E-03	
Tank Group 04	TG04-MW-01	SVOC	Anthracene	120-12-7	ID	Y	1.10E-04	1.00E-04	1.10E-04	NC	NC	2.99E-09	NC	NC	NC	1.9E-09	NC	5.7E-10	NC	NC	NC	NC	NC	4.7E-08	
Tank Group 04	TG04-MW-01	SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.00E-04	5.00E-05	1.00E-04	NC	NC	NC	NC	NC	7.3E-12	NC	7.3E-13	NC	NC	NC	NC	NC	9.5E-09	NC	
Tank Group 04	TG04-MW-01	SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.00E-04	5.00E-05	1.00E-04	NC	NC	NC	NC	NC	3.7E-11	8.6E-07	3.7E-12	8.6E-07	NC	NC	NC	NC	5.0E-08	1.1E-04	
Tank Group 04	TG04-MW-01	SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	5.00E-05	2.50E-05	5.00E-05	NC	NC	NC	NC	NC	1.8E-12	NC	1.8E-13	NC	NC	NC	NC	NC	1.6E-09	NC	
Tank Group 04	TG04-MW-01	SVOC	Benzo(g,h)perylene	191-24-2	D	Y	1.00E-04	5.00E-05	1.00E-04	NC	NC	NC	NC	NC	8.6E-09	NC	8.6E-10	NC	NC	NC	NC	NC	NC	1.1E-07	
Tank Group 04	TG04-MW-01	SVOC	Chrysene	218-01-9	B2	Y	1.00E-04	5.00E-05	1.00E-04	NC	NC	NC	NC	NC	3.7E-14	NC	3.7E-15	NC	NC	NC	NC	NC	NC	3.2E-11	NC
Tank Group 04	TG04-MW-01	SVOC	Fluorene	86-73-7	D	Y	9.20E-04	1.00E-04	9.20E-04	NC	NC	NC	NC	NC	NC	1.2E-07	NC	1.2E-08	NC	NC	NC	NC	NC	9.5E-07	
Tank Group 04	TG04-MW-01	SVOC	Naphthalene	91-20-3	C	Y	9.40E-03	1.00E-04	9.40E-03	3.1E-08	8.5E-04	2.25E-05	2.2E-10	6.2E-06	5.0E-08	3.4E-03	5.0E-09	3.4E-03	5.3E-07	1.4E-02	9.7E-10	2.6E-05	2.2E-07	2.4E-03	
Tank Group 04	TG04-MW-01	SVOC	Phenanthrene	85-01-8	D	Y	2.50E-04	5.00E-05	2.50E-04	NC	NC	NC	NC	NC	4.3E-08	NC	4.3E-09	NC	NC	NC	NC	NC	NC	3.4E-07	
Tank Group 04	TG04-MW-01	SVOC	Pyrene	129-00-0	NC	Y	6.00E-05	1.00E-04	6.00E-05	NC	NC	NC	NC	NC	1.0E-08	NC	1.0E-09	NC	NC	NC	NC	NC	NC	1.2E-07	
Tank Group 04	TG04-MW-01	INORG	Lead	7439-92-1	B2	Y	1.00E-03	5.00E-04	1.00E-03	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
Tank Group 04	TG04-MW-03	VOC	Benzene	71-43-2	A	Y	5.00E-04	2.50E-04	5.4E-10	6.5E-06	2.66E-06	3.8E-12	4.5E-08	5.9E-10	1.8E-05	5.9E-11	6.3E-06	8.8E-09	1.0E-04	1.6E-11	1.9E-07	8.4E-09	4.1E-05		
Tank Group 04	TG04-MW-03	VOC	Cumene	98-82-8	D	Y	5.00E-04	2.50E-04	NC	3.9E-07	2.82E-09	NC	2.8E-09	NC	8.4E-07	NC	8.3E-07	NC	6.2E-06	NC	1.1E-08	NC	6.8E-07		
Tank Group 04	TG04-MW-03	VOC	1,2-Dibromoethane	106-93-4	LC	Y	1.00E-05	5.00E-06	3.7E-10	1.9E-07	2.18E-08	2.6E-12	1.4E-09	4.4E-10	5.5E-07	4.4E-11	5.5E-07	6.3E-							

Appendix B

Risk-Based Screening Level Supporting Information and Calculations



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Attachments

- 1 Risk Based Screening Levels
- 2 Routine Worker Risk Based Screening Level Calculations
- 3 Construction Worker Risk Based Screening Level Calculations
- 4 Soil Migration to Groundwater Screening Level Calculations
- 5 Off-Site Resident Risk Based Screening Level Calculations
- 6 Nonpotable Groundwater Use Risk Based Screening Level Calculations



1 Introduction

Terraphase Engineering, Inc. (Terraphase), on behalf of Philadelphia Energy Solutions Refining and Marketing LLC (PESRM), has prepared this appendix to document the calculation of site-specific risk-based screening levels (RBSLs) for soil and groundwater. The RBSLs have been developed to support investigation decision-making at the Facility and determine the adequacy of data collected to support site-specific risk assessments which will be performed to close out areas of the Facility which are subject to various investigation/remedial action as part of redevelopment. This includes efforts to complete Site Assessment and Characterization for aboveground storage tanks under Act 32, efforts to investigate and obtain liability protection for several areas with suspected releases to the environment in accordance with Act 2, and efforts to investigate and attain closure of hazardous waste units in accordance with the Code of Federal Regulations Title 40, Part 264 Subpart G (as incorporated by reference in 25 Pa. Code Chapter 264a).

The RBSLs are developed with consideration for current and reasonably expected future land and groundwater use at and in the immediate vicinity of the Facility and use methods and assumptions consistent with Pennsylvania Department of Environmental Protection (PADEP) and United States Environmental Protection Agency (USEPA) risk assessment guidance.

RBSLs are developed for the following exposure scenarios:

Soil Exposure

- Routine worker exposure to constituents of potential concern (COPC) in soil via direct contact¹ and vapor intrusion
- Construction worker exposure to COPC in soil via direct contact
- Migration of COPC in soil to groundwater²

Groundwater Exposure

- Routine worker exposure to COPC in groundwater via volatilization to outdoor air and vapor intrusion
- Construction worker exposure to COPC in groundwater via direct contact
- Off-site resident exposure to COPC in groundwater via vapor intrusion
- Receptor exposure to COPC in groundwater via nonpotable groundwater use
- Migration of COPC in groundwater to surface water

¹ Includes incidental ingestion and dermal contact with COPCs in soil and inhalation of COPCs in soil-derived vapor and particulates.

² Uses groundwater RBSLs as target groundwater concentrations.



RBSLs are calculated for each of the COPC that have been (or will be) included in the soil and groundwater sampling performed by PESRM. A list of these COPC is provided in Attachment 1, Table 1.

The general assumptions used in the calculation of the human health-based RBSLs are summarized in Attachment 1, Table 2. The exposure factors for each receptor and exposure scenario are presented in Attachment 1, Table 3. Human health-based RBSLs are calculated at a target cancer risk level of 1×10^{-5} and a target noncancer hazard quotient of 0.1 and are presented in Attachment 1, Table 4. The target cancer risk level and target noncancer hazard quotient are used with consideration for the risk management goals established in Section 250.402(b) for attainment of the Site-Specific Standard (i.e., a cumulative excess cancer risk greater than 1×10^{-4} and a noncancer hazard index greater than 1³).

For efficiency, the RBSLs are developed in a manner that allows them to be used site-wide to complete Site Characterization at each area (e.g., Tank Group).

2 Risk-Based Screening Levels for Soil

This section details how RBSLs for soil are calculated accounting for routine worker (Section 2.1) and construction worker (Section 2.2) exposure scenarios. RBSLs which consider potential soil migration-to-groundwater assuming site-specific target groundwater concentrations are detailed in Section 2.3. The calculation of an RBSL for lead is summarized in Section 2.4.

The resulting RBSLs are presented in Attachment 1, Table 4.

2.1 Routine Workers

The RBSLs were calculated to evaluate commercial/industrial worker exposures to COPC in soil via: (1) direct contact and inhalation during outdoor activities and (2) vapor intrusion.

2.1.1 Exposure to Soil During Outdoor Activities

RBSLs for routine worker exposure to COPC in soil via incidental ingestion, dermal contact, and inhalation of particulates and vapors were estimated from unit risks and unit HQs as described below.

Lifetime Average Daily Dose

The lifetime average daily doses for soil ingestion ($LADD_{ing}$) and soil dermal contact ($LADD_{derm}$) are calculated as follows:

$$LADD_{ing} = C_{soil} \cdot \frac{IR \cdot FC \cdot EF \cdot ED}{BW \cdot AT_c}$$

$$LADD_{derm} = C_{soil} \cdot \frac{SA \cdot AF \cdot ABS_{derm} \cdot FC \cdot EF \cdot ED}{BW \cdot AT_c}$$

³ As estimated from exposure to COPC with the same target organ or target effect.



where C_{soil} is the chemical concentration in soil, IR is the ingestion rate, FC is the fraction of the soil that is contaminated, SA is the exposed skin surface area, AF is the soil-to-skin adherence factor, and ABS_{derm} is the chemical-specific dermal absorption factor.

Average Daily Dose

The average daily doses for soil ingestion (ADD_{ing}) and soil dermal contact (ADD_{derm}) are calculated as follows:

$$ADD_{ing} = C_{soil} \cdot \frac{IR \cdot FC \cdot EF \cdot ED}{BW \cdot AT_{nc}}$$

$$ADD_{derm} = C_{soil} \cdot \frac{SA \cdot AF \cdot ABS_{derm} \cdot FC \cdot EF \cdot ED}{BW \cdot AT_{nc}}$$

Unit Cancer Risk, Unit Noncancer HQ, and RBSL for Soil Ingestion and Dermal Exposure Routes

For the soil ingestion and dermal exposure routes, the unit cancer risk and unit noncancer HQ are calculated as follows:

$$Unit\ Risk = LADD \cdot SF$$

$$Unit\ HQ = \frac{ADD}{RfD}$$

The resulting RBSLs for each route (i) were calculated as follows:

$$Cancer\ RBSL_i = \frac{C_{unit} \cdot TCRL}{UnitRisk_i}$$

$$Noncancer\ RBSL_i = \frac{C_{unit} \cdot THQ}{UnitHQ_i}$$

The RBSLs for each route (i) are conservatively combined to give cancer and noncancer-based RBSLs that are based upon the combined receptor-specific exposure:

$$RBSL = \left(\sum_i RBSL_i^{-1} \right)^{-1}$$

The unit risk, unit HQ, and resulting RBSL calculations for each COPC for the soil ingestion and dermal exposure routes are presented in Attachment 2. The exposure factors used for routine workers are presented in Attachment 1, Table 3. The RBSLs for routine worker exposure to soil are provided in Attachment 1, Table 4.

Estimating Air Concentrations

For the inhalation route, the air concentrations (C_{air}) of vapors and particulates from soil are calculated as follows:



$$C_{air} = J \cdot \frac{C}{Q}$$

where $J \cdot C/Q$ is an air concentration that is normalized to unit concentration (i.e., 1 milligram per kilogram [mg/kg]) in soil. The J term is the normalized average vapor (J_v) or particulate flux ($J_{10,w}$), and the C/Q term is the air concentration normalized to a unit flux (i.e., C/Q is an air dispersion factor).

The normalized average vapor flux J_v of a chemical from unsaturated soil is conservatively estimated using an unsteady-state model derived by Jury et al. (1983). This model conservatively assumes that volatile chemicals are present in the soil to a finite depth equal to the approximate depth to groundwater at the Facility of 19 feet (ft) below ground surface (bgs)⁴. The equation for J_v is given by:

$$J_v = \frac{C_0}{T} \left[Z_1 \operatorname{erfc} \left(\frac{Z_1}{2\sqrt{D_E T}} \right) + 2 \sqrt{\frac{D_E T}{\pi}} \left(1 - e^{-\frac{Z_1^2}{4D_E T}} \right) \right]$$

where,

$$D_E = \frac{D_G H + D_L}{\rho_b K_d + \theta_w + \theta_a H}$$

$$D_G = D_{air} \cdot \frac{\theta_a^{10/3}}{n^2}$$

$$D_L = D_{water} \cdot \frac{\theta_w^{10/3}}{n^2}$$

$C_{s,0}$ is the concentration in soil, ρ_b is the soil bulk density, T is the averaging period (equivalent to ED), H is the Henry's law constant, K_d is the equilibrium-partitioning coefficient, θ_w is the water-filled soil porosity, θ_a is the air-filled soil porosity, D_{air} is diffusion rate through air, D_{water} is the diffusion rate through water, and n is total porosity. For this risk assessment, Henry's law constants have been adjusted to reflect a specific subsurface temperature of 18°C (PADEP 2021).

Derivation of these equations and definition of the equation parameters can be found in the Jury et al. 1983 journal article and in USEPA guidance (1996a, 1996b), and therefore, are not repeated here. The calculation of J_v was performed using values for chemical-specific parameters and default soil parameters recommended in the USEPA guidance (2004a) using a soil type of sand, which is

⁴ Depth to groundwater varies across the Facility. 19 ft bgs is the average depth to groundwater in Tanks Groups 02, 03, 04, and 05. The average depth to groundwater in Tank Group 01 is 10 ft bgs. The average depth to groundwater in Tank Groups 06, 07, and 08 is 3 ft bgs. Using a depth to groundwater of 19 ft bgs results in the most conservative RBSLs for this exposure route in comparison to using groundwater depths observed at other areas of the Facility.



representative of the soil type found at the Facility. The calculation of J_v is shown in Attachment 2, Table 1.

The normalized average particulate flux $J_{10,w}$ of a chemical from soil is conservatively estimated using the “unlimited reservoir” model that USEPA has adapted for screening-level analysis of particulate emissions from soil (USEPA 1996a, 1996b). This model assumes that particulate emissions are created by wind erosion. The equation for $J_{10,w}$ is given by:

$$J_{10,w} = 0.036 \cdot (1 - G) \cdot \left(\frac{u_m}{u_t}\right)^3 \cdot F(x) \frac{g}{m^2 hr} \cdot \frac{hr}{60^2 sec} \cdot \frac{10^{-3} kg}{g}$$

where G is fraction of ground/vegetative cover, u_m is the mean annual wind speed at the nearest weather station which is located in Philadelphia, Pennsylvania (NOAA 2018), u_t is the equivalent threshold wind speed at the anemometer height at which u_m was measured in Philadelphia, Pennsylvania, and $F(x)$ is a function dependent on u_m/u_t . The details of this model can be found in USEPA guidance (1996a, 1996b), and are not repeated here. The default parameter values recommended in the USEPA guidance (1996a, 1996b) are used with site-specific wind speed in calculating $J_{10,w}$. The calculation of $J_{10,w}$ is shown in Attachment 2, Table 2.

The C/Q term is estimated using the empirical correlation in USEPA’s *Supplemental Soil Screening Guidance* (2002), using the correlation coefficients for Philadelphia, Pennsylvania, and assuming a source area of 70.6 acres. This source area size is a conservative estimate using the largest area evaluated currently being characterized by PESRM. The calculation of C/Q is shown in Attachment 2, Table 4.

Unit Cancer Risk, Unit Noncancer HQ, and RBSL for Inhalation Route

For the inhalation route, the inhalation cancer unit risk and noncancer unit HQ are calculated using the chemical concentration in air (C_{air}), as follows:

$$Unit Risk_{inh} = C_{air} \cdot URF \cdot \frac{ET \cdot EF \cdot ED}{AT_c}$$

$$Unit HQ_{inh} = \frac{C_{air}}{RfC} \cdot \frac{ET \cdot EF \cdot ED}{AT_{nc}}$$

The resulting RBSLs for the inhalation route were calculated as follows:

$$Cancer RBSL_{inh} = \frac{C_{unit} \cdot TCRL}{UnitRisk_{inh}}$$

$$Noncancer RBSL_{inh} = \frac{C_{unit} \cdot THQ}{UnitHQ_{inh}}$$

The RBSLs for each route (i) were conservatively combined to give cancer and noncancer-based RBSLs that are based upon the combined receptor-specific exposure:



$$RBSL = \left(\sum_i RBSL_i^{-1} \right)^{-1}$$

The unit risk, unit HQ, and resulting RBSL calculations for each COPC for the inhalation route are presented in Attachment 2. The exposure factors used for routine workers are presented in Attachment 1, Table 3. The RBSLs for routine worker exposure to soil are provided in Attachment 1, Table 4.

2.1.2 Vapor Intrusion

RBSLs for routine worker exposure to COPC in soil via vapor intrusion were estimated from unit risks and unit HQs in accordance with the general methodology described in Section 2.1.1.

Modeling Vapor Intrusion from Soil

For the indoor air exposure pathway, the unit cancer risk and unit noncancer HQ are calculated as follows:

$$Unit\ Risk = C_{building} \cdot URF \cdot \frac{ET \cdot EF \cdot ED}{AT_c}$$

$$Unit\ HQ = \frac{C_{building}}{RfC} \cdot \frac{ET \cdot EF \cdot ED}{AT_{nc}}$$

where $C_{building}$ is the concentration in indoor air. For assessing routine worker exposures, chronic $RfCs$ are used. The indoor air concentration is estimated using the modeling approach and input parameter values discussed below.

The indoor air concentrations are estimated using the following relationships described by Johnson and Ettinger (1991):

$$C_{building} = \alpha \cdot C_{source}$$

where α is an attenuation coefficient and C_{source} is the source vapor concentration that is given by the following equation:

$$C_{source} = C_{soil} \left(\frac{K_d}{H} + \frac{\theta_w}{\rho_b H} + \frac{\theta_a}{\rho_b} \right)^{-1}$$

The attenuation coefficient, assuming that chemicals are present in the soil at constant concentrations, is given by the following equation:

$$\alpha = \frac{\left[\frac{D_T^{eff} A_B}{Q_{building} L_T} \right] \exp\left(\frac{Q_{soil} L_{crack}}{D^{crack} A_{crack}} \right)}{\exp\left(\frac{Q_{soil} L_{crack}}{D^{crack} A_{crack}} \right) + \left[\frac{D_T^{eff} A_B}{Q_{building} L_T} \right] + \left[\frac{D_T^{eff} A_B}{Q_{soil} L_T} \right] \left[\exp\left(\frac{Q_{soil} L_{crack}}{D^{crack} A_{crack}} \right) - 1 \right]}$$



Derivation of this equation and definition of the equation parameters can be found in Johnson and Ettinger's 1991 journal article and therefore are not repeated here.

The effective diffusion coefficient term D_T^{eff} in the equation for the attenuation coefficient α is calculated using a soil-water profile that is estimated using a soil type of sand, which is a conservative assumption for the range of soil types found at the Facility. The soil-water profile in the vadose zone is estimated using the van Genuchten soil-water retention equation with default water retention parameters appropriate for sand (USEPA 2004a). It is conservatively assumed that the building cracks are filled with sand. These parameters and the resulting soil-water profile in the vadose zone are shown in Attachment 2 of this appendix.

The remaining parameters in the equation for the attenuation coefficient α , which relate to building characteristics, are conservatively based on the default values for a slab-on-grade nonresidential building with an air exchange rate (ER) of 0.60 per hour as recommended by PADEP (2021). The values used in the calculations are shown in Attachment 2 of this appendix and their bases are discussed in PADEP (2021) and USEPA (2004a) guidance.

Indoor air concentrations from the soil vapor intrusion are calculated with a mass balance check. The mass balance check ensures that the assumed mass of a chemical infiltrating into the building over the assumed exposure period does not exceed an upper-bound estimate of the chemical's mass in the vadose zone underlying the building. The upper-bound estimate of the constituent's mass in the vadose zone is conservatively estimated using the highest concentration of the constituent from any depth at each area and assuming this concentration represents the soil concentration from slab to the water table. The attenuation coefficient α_{ML} used in the mass balance check is given by the following equation:

$$\alpha_{ML} = \left(\frac{\rho_b K_d}{H} + \frac{\theta_w}{H} + \theta_a \right) \cdot \left(\frac{L_B \cdot W_B \cdot \Delta H}{Q_{building} \cdot ED} \right)$$

where L_B is the length of the building, W_B is the width of the building, ΔH is the contaminant thickness (conservatively assumed to be the distance between groundwater and a building foundation (L_{T-gw})), and $Q_{building}$ is the air flow rate through the building. The depth to groundwater is conservatively assumed to be 19 ft bgs⁵. All parameters are shown in Attachment 2 of this appendix.

$Q_{building}$ is a function of the size of the building (or unit) and the amount of air exchanges that occur as a result of operating the air handling and ventilation system. It can be calculated as follows (USEPA 2004a, 2017b):

$$Q_{building} = L_B \cdot W_B \cdot H_B \cdot ER$$

where H_B is the occupied height of the building and ER is the air exchange rate.

⁵ Depth to groundwater varies across the Facility. 19 ft bgs is the average depth to groundwater in Tanks Groups 02, 03, 04, and 05. The average depth to groundwater in Tank Group 01 is 10 ft bgs. The average depth to groundwater in Tank Groups 06, 07, and 08 is 3 ft bgs. Using a depth to groundwater of 19 ft bgs results in the most conservative RBSLs for this exposure route in comparison to using groundwater depths observed at other areas of the Facility.



For $Q_{building}$, the length (10 m), width (10 m), and height (2.44 m) of the generic nonresidential building were assumed, consistent with PADEP's recommended default assumptions for generic slab-on-grade nonresidential buildings (PADEP 2021). A conservative estimate of ER (i.e., 0.60/hr) was assumed based upon PADEP's (2021) recommended default for a generic nonresidential building.

The unit risk, unit HQ, and resulting RBSL calculations for each COPC for the inhalation route are presented in Attachment 2 of this appendix. The RBSLs for routine worker exposure to soil are provided in Attachment 1, Table 4.

2.2 Construction Workers

RBSLs for construction worker exposure to COPC in soil via incidental ingestion, dermal contact, and inhalation of particulates and vapors were estimated from unit risks and unit HQs in a manner analogous to the calculation described in Section 2.1.1 for routine workers. The only differences are the use of exposure factors for construction workers and that airborne dust concentrations are estimated as discussed below.

During construction activities the PM_{10} level is set at 50 micrograms per cubic meter, which is the former annual average National Ambient Air Quality Standard for PM_{10} since construction workers are assumed to be performing excavations for a work year. It is conservatively assumed that the PM_{10} concentration would be at this limit every day for the entire period of construction worker exposure.

The unit risk, unit HQ, and resulting RBSL calculations for each COPC are presented in Attachment 3. The exposure factors used for construction workers are presented in Attachment 1, Table 3. The RBSLs for construction worker exposure to soil are provided in Attachment 1, Table 4.

2.3 Soil Migration-to-Groundwater

RBSLs developed to conservatively evaluate the potential for COPC in soil to leach to groundwater at concentrations that may pose an unacceptable risk to human health or the environment are calculated using the methodologies described in the *Soil Screening Guidance: User's Guide* (USEPA 1996a).

RBSLs were calculated using both an "equilibrium partitioning" (also called soil/water partitioning [USEPA 1996a]) and a "leach test" methodology, as described below. For each COPC, the soil screening level corresponding to the more realistic of the two calculation methods is used as a soil migration-to-groundwater screening level. For COPC that are relatively immobile in the subsurface (e.g., semivolatile organic compounds), the equilibrium partitioning method provides a more realistic, yet conservative, soil leachate concentration because it assumes that the chemical concentration in soil remains constant over time (since the chemical is immobile, its concentration in soil does not significantly decrease over time). For chemicals that are relatively mobile (e.g., volatile organic compounds), the leach test method provides a more realistic, yet conservative, soil leachate concentration because it accounts for a finite amount of chemical mass in the soil. These two approaches of estimating soil leachate concentrations are conservative since they ignore attenuation of the chemical concentration in the vadose zone and dilution at the water table.



Equilibrium Partitioning

The soil/water partition equation, which assumes an infinite source of the chemical, can be used to estimate concentrations of chemicals in soil leachate for a given soil concentration.

$$C_{soil} = C_{pw} \left(K_d + \frac{\theta_w + \theta_a H}{\rho_b} \right)$$

In this relationship, C_{soil} is the soil concentration (mg/kg), C_{pw} is the soil leachate concentration (milligrams per liter [mg/L]), K_d is the chemical specific soil-water partition coefficient (liter per kilogram), θ_w is the water-filled soil porosity (unitless), θ_a is the air-filled soil porosity (unitless), H is the chemical-specific Henry's Law constant (unitless), and ρ_b is the dry soil bulk density (kilogram per liter [kg/L]). For organic chemicals, K_d is equal to the product of the chemical-specific soil organic carbon/water partition coefficient, K_{oc} (liter per kg), and the fraction organic carbon in soil, f_{oc} (unitless). For this analysis, the soil properties are based upon sand, the most conservative soil type identified at the Site. Specifically, θ_w is assumed to be 0.05 (liters per liter), θ_a is assumed to be 0.32 (liters per liter), and ρ_b is assumed to be 1.66 kg/L (USEPA 2004a).⁶ The f_{oc} is assumed to be 0.005 (grams per gram) (USEPA 1996a). The chemical-specific K_d , and K_{oc} , and H (and their sources) used are presented in Attachment 4.

Leach Test Method

USEPA's leach test method (SW-846, Method 1312)⁷ can be simulated by assuming a hypothetical worst-case leach test outcome in which the entire mass of the chemical in soil is extracted into the leaching fluid. With this assumption, the concentration of the COPC in soil can be divided by 20 (which is the ratio of the mass of leaching fluid to the mass of soil in the leaching test protocol) to estimate its leachate concentration as follows:

$$C_{soil} = C_{pw} \times \frac{mr_{fluid:solid}}{\rho_{fluid}}$$

In the relationship above, C_{soil} is the soil concentration (mg/kg), C_{pw} is the soil leachate concentration (mg/L), $mr_{fluid:solid}$ (kilogram per kilogram) is the mass ratio of the extraction fluid to soil used in the leach test (i.e., 20 kg fluid per 1 kg soil), and ρ_{fluid} (kg/L) is the density of the extraction fluid (assumed to be 1 kg/L).

Dilution Attenuation Factor and Calculation of Soil Migration to Groundwater Screening Levels

As soil leachate moves through soil and groundwater, chemical concentrations are attenuated. The reduction in concentrations can be expressed by a dilution attenuation factor (DAF) defined as a ratio of soil leachate concentration to receptor point concentration (USEPA 1996a).

⁶ Water-filled and air-filled porosity were estimated using the soil properties for sand (USEPA 2004) and the van Genuchten equation (van Genuchten 1980), assuming a depth to groundwater of 19 ft.

⁷ Method 1312: Synthetic Precipitation Leaching Procedure, <https://www.epa.gov/sites/production/files/2015-12/documents/1312.pdf>.



Rather than independently model leachate migration to calculate a site-specific *DAF*, a generic *DAF* of 20 was conservatively used in the development of the RBSLs. This default *DAF* is recommended by USEPA (1996a) for contaminated soil sources up to 0.5 acres.

To calculate soil migration to groundwater screening levels, the equations presented above can be further refined as follows:

$$C_{soil-SPLP} = C_{pw} \times \frac{m r_{fluid:solid}}{\rho_{fluid}} \times DAF$$

$$C_{soil-Kd} = C_{pw} \left(K_d + \frac{\theta_w + \theta_a H}{\rho_b} \right) \times DAF$$

By substituting target groundwater concentrations for C_{pw} in the leach test method and equilibrium-partitioning method equations, and assuming a *DAF*, two possible soil screening levels are calculated. The higher of the two estimated values was used as the RBSL as the higher represents the more realistic, yet conservative, soil screening level for this pathway.

The target groundwater concentration for these screening levels is based on the minimum of the following groundwater RBSLs:

- Routine worker exposure to COPC in groundwater via volatilization to outdoor air and vapor intrusion
- Construction worker exposure to COPC in groundwater via direct contact
- Off-site resident exposure to COPC in groundwater via vapor intrusion
- Receptor exposure to COPC in groundwater via nonpotable groundwater use
- Migration of COPC in groundwater to surface water

The acceptable groundwater concentrations are presented in Attachment 4. The soil migration-to-groundwater screening levels are presented in Attachment 1, Table 4.

2.4 Lead

Exposure of routine workers to lead in soil during outdoor activities is evaluated using a screening level of 2,520 mg/kg. This screening level is calculated following USEPA guidance (USEPA 2003), including updates (USEPA 2009, 2017a). The screening level is intended to protect female workers of child-bearing age who contact soil.

The derivation of the industrial soil screening level is presented in Attachment 2, Table 12.



3 Risk-Based Screening Levels for Groundwater

This section details how RBSLs for groundwater are calculated for the routine worker (Section 3.1), construction worker (Section 3.2), and off-facility residential (Section 3.3) exposure scenarios. RBSLs which consider potential off-facility nonpotable groundwater use and surface water exposure are detailed in Sections 3.4 and 3.5, respectively.

The resulting RBSLs are presented in Attachment 1, Table 4.

3.1 Routine Workers

The RBSLs are calculated to evaluate commercial/industrial worker exposures to COPC via: (1) volatilization to outdoor air from groundwater and (2) vapor intrusion from groundwater.

3.1.1 Exposure to Groundwater Via Volatilization to Outdoor Air

RBSLs for routine worker exposure to COPC in groundwater via volatilization to outdoor air were estimated from unit risks and unit HQs in accordance with the general methodology discussed in Section 2.1.1, except for the calculation of the vapor flux J .

Vapor emissions from groundwater (not exposed) are calculated using the steady-state diffusion equation in one-dimension assuming a constant source concentration and a maximum concentration gradient, as follows:

$$J = D_e \cdot \frac{C_v}{L}$$

where D_e is the effective diffusion coefficient of the chemical in the vapor phase, C_v is the vapor concentration in equilibrium with the groundwater concentration, and L is the distance from the water table to the ground surface. The equilibrium “source” vapor concentration in the above equations is related to the chemicals’ groundwater concentration (C_{gw}) using Henry’s law (H):

$$C_{source} = C_{gw} \cdot H$$

D_e for the vapor phase is calculated using a soil-water profile that is estimated using a soil type of sand, the most conservative soil type identified at the Facility. The soil-water profile in the vadose zone, shown in Attachment 2, is estimated using the van Genuchten soil-water retention equation with default water retention parameters appropriate for sand (USEPA 2004a). The depth to groundwater is assumed to be 3 ft bgs⁸.

⁸ Depth to groundwater varies across the Facility. 19 ft bgs is the average depth to groundwater in Tanks Groups 02, 03, 04, and 05. The average depth to groundwater in Tank Group 01 is 10 ft bgs. The average depth to groundwater in Tank Groups 06, 07, and 08 is 3 ft bgs. Using a depth to groundwater of 3 ft bgs results in the most conservative RBSLs for this exposure route in comparison to using groundwater depths observed at other areas of the Facility.



The calculation of D_e is shown in Attachment 2.

The unit risk, unit HQ, and resulting RBSL calculations for each COPC for the inhalation route are presented in Attachment 2. The exposure factors used for routine workers are presented in Attachment 1, Table 3. The RBSLs for routine worker exposure to groundwater are provided in Attachment 1, Table 4.

3.1.2 Vapor Intrusion

RBSLs for routine worker exposure to COPC via vapor intrusion from groundwater are estimated from unit risks and unit HQs in accordance with the general methodology described in Section 2.1.2, except for the calculation of source vapor concentration.

The source vapor concentration for a chemical in groundwater is calculated from the chemical's concentration in groundwater C_{gw} using Henry's law as follows:

$$C_{source} = C_{gw} \cdot H$$

In calculating the attenuation coefficient α , the depth to groundwater was conservatively assumed to be 3 ft bgs below the basement slab. The calculation of α is shown in Attachment 2 of this appendix.

The unit risk, unit HQ, and resulting RBSL calculations for each COPC for the inhalation route are presented in Attachment 2. The exposure factors used for routine workers are presented in Attachment 1, Table 3. The RBSLs for routine worker exposure to groundwater are provided in Attachment 1, Table 4.

3.2 Construction Workers

RBSLs for construction worker exposure to COPC in groundwater via incidental ingestion, dermal contact, and inhalation of vapors during excavations that extend into the water table are estimated from unit risks and unit HQs in accordance with the general methodology described in Section 2.1.1.

Lifetime Average Daily Dose

The LADD for groundwater ingestion ($LADD_{ing}$) and groundwater dermal contact ($LADD_{derm}$) were calculated as follows:

$$LADD_{ing} = C_{gw} \frac{IR \cdot EF \cdot ED}{BW \cdot AT_c}$$

$$LADD_{derm} = C_{gw} \frac{DA_{event} \cdot SA \cdot EV \cdot EF \cdot ED}{BW \cdot AT_c}$$

where C_{gw} is the chemical concentration in groundwater (assumed to be a unit concentration of 1 mg/L), IR is the groundwater ingestion rate, DA_{event} is the absorbed dose per event, SA is the exposed skin surface area, and EV is the event frequency.



The DA_{event} for organic chemicals is estimated using an unsteady-state approach (USEPA 2004b, Equations 3.2 and 3.3), which is more conservative than the steady-state approach (USEPA 1989), particularly for hydrophobic chemicals. The DA_{event} for inorganic chemicals is estimated using a steady-state approach (USEPA 2004b, Equation 3.4). The details of the calculation of DA_{event} for organic and inorganic chemicals are provided by USEPA (2004b) and not repeated here.

Average Daily Dose

Average daily dose (ADD) for groundwater ingestion (ADD_{ing}) and groundwater dermal contact (ADD_{derm}) were calculated as follows:

$$ADD_{ing} = C_{gw} \frac{IR \cdot EF \cdot ED}{BW \cdot AT_{nc}}$$

$$ADD_{derm} = C_{gw} \frac{DA_{event} \cdot SA \cdot EV \cdot EF \cdot ED}{BW \cdot AT_{nc}}$$

Unit Cancer Risk, Unit Noncancer HQ, and RBSL for Groundwater Ingestion and Dermal Exposure Routes

For the groundwater ingestion and dermal exposure routes, the unit cancer risk and unit noncancer HQ were calculated as follows:

$$Unit\ Risk = LADD \cdot SF$$

$$Unit\ HQ = \frac{ADD}{RfD}$$

The unit risk, unit HQ, and resulting RBSL calculations for each COPC for the groundwater ingestion and dermal exposure routes are presented in Attachment 3. The exposure factors used for construction workers are presented in Attachment 1, Table 3. The RBSLs for construction worker exposure to groundwater are provided in Attachment 1, Table 4.

Estimating Air Concentrations

For the inhalation route, the air concentrations (C_{air}) resulting from the volatilization of COCs from groundwater in an excavation were calculated as follows:

$$C_{air} = J \cdot C/Q$$

Where $J \cdot C/Q$ is an air concentration that is normalized to unit concentration (i.e., 1 mg/L) in groundwater. The J term is the normalized average vapor and the C/Q term is the air concentration normalized to a unit flux (i.e., C/Q is an air dispersion factor).

The normalized vapor flux J of a chemical from groundwater was estimated using an overall mass transfer coefficient that is recommended by USEPA (1995b):

$$J = \left(\frac{1}{k_l} + \frac{1}{Hk_g} \right)^{-1} \left(\frac{m}{10^2 cm} \right) \left(\frac{10^3 L}{m^3} \right)$$



Where k_l and k_g are the liquid-phase and gas-phase mass transfer coefficients given by the following:

$$k_l = \left(\frac{MW_o}{MW}\right)^{0.5} \left(\frac{T}{298K}\right) k_{l,o}$$

$$k_g = \left(\frac{MW_w}{MW}\right)^{0.335} \left(\frac{T}{298K}\right)^{1.005} k_{g,w}$$

Where MW , MW_o , and MW_w are the molecular weights of the chemical, oxygen, and water, respectively, T is the absolute temperature of the groundwater, $k_{l,o}$ is the liquid-phase mass transfer coefficient for oxygen (0.002 centimeters per second), and $k_{g,w}$ is the gas-phase mass transfer coefficient for water vapor (0.833 centimeters per second).

For groundwater exposures during excavations to the water table, C/Q is based on a source area of a 15- by 15-foot excavation area, and an averaging period of 24 hours. The maximum 24-hour average air concentration is estimated from the annual average air concentration by using a conservative factor of 0.4/0.19 or 2.1 (USEPA 2002).

Unit Cancer Risk, Unit Noncancer HQ, and RBSL for Inhalation Route

For the inhalation route, the inhalation cancer unit risk and noncancer unit HQ are calculated using the chemical concentration in air (C_{air}), as follows:

$$Unit\ Risk_{inh} = C_{air} \cdot URF \cdot \frac{ET \cdot EF \cdot ED}{AT_c}$$

$$Unit\ HQ_{inh} = \frac{C_{air}}{RfC} \cdot \frac{ET \cdot EF \cdot ED}{AT_{nc}}$$

The unit risk, unit HQ, and resulting RBSLs calculations for each COPC for the inhalation route are presented in Attachment 3. The exposure factors used for construction workers are presented in Attachment 1, Table 3. The RBSLs for construction worker exposure to groundwater are provided in Attachment 1, Table 4.

3.3 Off-Facility Resident

RBSLs for off-facility resident exposure to COPC via vapor intrusion from groundwater were estimated from unit risks and unit HQs in accordance with the general methodology described in Section 2.1.2 for routine workers. The only differences are the use of exposure factors for off-facility residents and that a depth to groundwater of 19 ft bgs was used, consistent with the average depth to groundwater identified in areas currently being investigated by PESRM that are in closest proximity to off-facility residential areas.⁹

⁹ Tank Groups 02, 03, 04, and 05



The unit risk, unit HQ, and resulting RBSL calculations for each COPC are presented in Attachment 5. The exposure factors used for routine workers are presented in Attachment 1, Table 3. The RBSLs for off-facility resident exposure to groundwater are provided in Attachment 1, Table 4.

3.4 Nonpotable Groundwater Use

Potential exposures to COPC in groundwater via nonpotable groundwater use are evaluated using a hypothetical scenario where groundwater is used to fill a backyard wading pool (“kiddie” pool). This scenario represents a reasonable worst case exposure scenario in which the estimated exposure is expected to be higher than those associated with other nonpotable uses (e.g., watering lawns, washing cars). Potential routes of exposure in this scenario include incidental ingestion, dermal contact, and inhalation of vapors. RBSLs were estimated from unit risks and unit HQs in accordance with the general methodology described in Section 2.1.1 and the following exposure factors:

Exposure Factors

For this evaluation, standard default exposure factors recommended by PADEP and USEPA for estimating RME are used where available and appropriate. Where standard default exposure factors are not available or appropriate for an exposure scenario, the evaluation is conducted using similarly conservative exposure factors that are based on site-specific considerations and professional judgment.

Exposure Frequency and Duration

The exposure frequency for the kiddie pool scenario is 96 days/year, which is based on 4 days per week for the number of months, 6 months, when the average daily temperature is above 65 degrees Fahrenheit in Philadelphia, Pennsylvania (NOAA 2018). Residents are assumed to be exposed to groundwater for 26 years (6 years as children and 20 years as adults; USEPA 2014). This combination of exposure frequency and exposure duration is expected to be conservative for the amount of time that residents would actually spend using groundwater off-facility.

Incidental Water Ingestion

The rate of 0.05 L/hour is the USEPA-recommended value for ingestion of water while swimming (USEPA 1989).

Dermal Contact Rate

The exposed skin surface areas of 6,365 cm² and 19,652 cm² are USEPA’s recommended values for evaluating RME with groundwater by children and adults, respectively (USEPA 2014). Child and adult residents are assumed to wade in the pool for 2 hours per event, and one event per day, based on professional judgment. The absorbed dose for organic chemicals is estimated using the nonsteady-state approach (USEPA 2004b), which is more conservative than the steady-state approach (USEPA 1989), particularly for hydrophobic chemicals. The permeability coefficient (K_p) for dermal absorption of organic chemicals from groundwater is estimated following USEPA guidance (USEPA 2004b).



Water Concentration in Kiddie Pool

The model for estimating vapor emission from a residential kiddie pool is based on models for estimating vapor emissions from open-top batch tanks (USEPA 1995a, 1995b). The residential kiddie pool is modeled as a 6-ft diameter tank that is 9 inches deep and is assumed to be filled with groundwater once per day. The concentration of volatile organic chemicals in the kiddie pool water decreases over time as the chemicals volatilize into the air. The average concentration over a period t is given by:

$$\bar{C}_w = C_{w,o} \frac{d}{K \cdot t} (1 - e^{-Kt/d})$$

where $C_{w,o}$ is the initial concentration, d is the depth of water in the pool and K is the chemical's overall mass transfer coefficient (USEPA 1995b). K is calculated as follows:

$$K = \frac{k_l \cdot H k_g}{k_l + H k_g}$$

where H is the Henry's law constant, and k_l and k_g are the liquid-phase and gas-phase mass transfer coefficients given by the following equations (USEPA 1995a):

$$k_l = 10^{-6} + 144 \cdot 10^{-4} (0.01 u_{10} \sqrt{6.1 + 0.63 u_{10}})^{2.2} S_{c_l}^{-0.5}$$

$$k_g = 4.82 \cdot 10^{-3} u_{10}^{0.78} S_{c_g}^{-0.67} d_e^{-0.11}$$

where S_{c_l} and S_{c_g} are liquid-phase and gas-phase Schmidt numbers, d_e is the effective diameter of the water surface (m), and u_{10} is wind speed at 10 m above the water surface, which is 4.2 m/s based on the annual average wind speed in Philadelphia, Pennsylvania (NOAA 2018).

Air Concentration from Kiddie Pool

The concentration of the chemical in air at the water surface is given by the following:

$$C_{air} = \bar{C}_w \cdot K \cdot (C/Q)$$

The C/Q term is estimated using the empirical correlation in USEPA's *Supplemental Soil Screening Guidance* (2002), using the correlation coefficients for Philadelphia, Pennsylvania, and assuming a source area of a 6 by 6 foot kiddie pool. This air concentration is expected to be higher than actual air concentrations to which individuals would be exposed while in the kiddie pool.

Unit Cancer Risk, Unit Noncancer HQ, and RBSL

The unit risk, unit HQ, and resulting RBSL calculations for each COPC for the groundwater ingestion, dermal, and inhalation of vapor exposure routes are presented in Attachment 6. The RBSLs for off-facility nonpotable groundwater use are provided in Attachment 1, Table 4.



3.5 Groundwater Migration-to-Surface Water

This section explains how groundwater screening levels are derived to support the evaluation of groundwater-to-surface water exposure scenarios.

The groundwater (MtsW) screening levels are based upon specific water quality criteria consistent with the designated water use of the Schuylkill River¹⁰ and the National Recommended Water Quality Criteria for human health consumption of organisms only¹¹. The minimum of these criteria was conservatively selected. Where criteria were not available for a specific chemical, the criteria were selected from the USEPA Region 3 Biological Technical Assistance Group Freshwater Screening Benchmarks¹² or the USEPA Region 4 Ecological Screening Values¹³.

Per the analysis conducted by Baird (2002), a conservative estimate of the groundwater-surface water mixing ratio of 0.0013 (or a dilution factor ~ 1000) was used to conservatively derive groundwater concentrations that would be protective of surface water exposures in the Schuylkill River.

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Attachment 1

Risk Based Screening Levels

Table 1 – Chemicals of Potential Concern (COPC)

Table 2 – General Assumptions

Table 3 – High End Exposure Factors

Table 4 – Site-Specific Risk Based Screening Levels (Target Risk of 1×10^{-5} and HQ of 0.1)



Attachment 1**Table 1:****Constituents of Potential Concern (COPC)**

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN
VOC	Benzene	71-43-2
VOC	Cumene	98-82-8
VOC	1,2-Dibromoethane	106-93-4
VOC	1,2-Dichloroethane	107-06-2
VOC	Ethyl Benzene	100-41-4
VOC	Methyl tert-butyl ether	1634-04-4
VOC	Toluene	108-88-3
VOC	1,2,4-Trimethylbenzene	95-63-6
VOC	1,3,5-Trimethylbenzene	108-67-8
VOC	Xylenes (total)	1330-20-7
SVOC	Acenaphthene	83-32-9
SVOC	Anthracene	120-12-7
SVOC	Benzo(a)anthracene	56-55-3
SVOC	Benzo(a)pyrene	50-32-8
SVOC	Benzo(b)fluoranthene	205-99-2
SVOC	Benzo(g,h,i)perylene	191-24-2
SVOC	Benzo(k)fluoranthene	207-08-9
SVOC	Chrysene	218-01-9
SVOC	Dibenz(a,h)anthracene	53-70-3
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6
SVOC	Ethanol	64-17-5
SVOC	Fluorene	86-73-7
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5
SVOC	Naphthalene	91-20-3
SVOC	Phenanthrene	85-01-8
SVOC	Pyrene	129-00-0
SVOC	Tetraethylene Glycol	112-60-7
PCB	PCBs (total)	1336-36-3
INORG	Antimony	7440-36-0
INORG	Arsenic	7440-38-2
INORG	Chromium III	16065-83-1
INORG	Chromium VI	18540-29-9
INORG	Cyanide (total)	57-12-5
INORG	Lead	7439-92-1
INORG	Nickel	7440-02-0
INORG	Vanadium	7440-62-2

Abbreviations:

Chem Group - chemical group

VOC - volatile organic compounds

SVOC - semi-volatile organic compounds

PCB - polychlorinated biphenyls

INORG - metals

Attachment 1

Table 2:

General Assumptions

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Parameter	Value	Units	Basis
Exposure Factors	Various	-	High-end exposure factors compiled for each receptor/exposure scenario. Based upon standard default exposure factors used by PADEP [25 Pa Code 250.602(c)(2)] and USEPA (1991, 2011, 2014) for estimating reasonable maximum exposures.
Toxicity Values	Various	-	Compiled in accordance with USEPA (2003)
Target Cancer Risk Level	1x10 ⁻⁵	-	Project-Specific
Target Noncancer Hazard Quotient	0.1	-	Project-Specific
Dispersion Model Correlation Area	Philadelphia	-	Per USEPA (2002)
Emission Area for Soil and Noncontact GW Exposures	70.6	acres	Total area of the largest Tank Group (i.e., Tank Group 04)
Mean Annual Wind Speed	9.3	mph	NOAA (2018), For Philadelphia
Depth to Groundwater			
Tank Group 01	10	ft bgs	Temporal and spatial average depth to groundwater
Tank Group 02, 03, 04, and 05	19	ft bgs	
Tank Group 06, 07, 08	3	ft bgs	
Soil Type	Sand	-	Based upon the extensive presence of fill material across the Site
Fraction Organic Carbon	0.005	unitless	Per PADEP (2021)
Building Parameter Assumptions			
Commercial/Industrial			PADEP (2021) Default
Bldg foundation thickness	0.1	m	
Bldg foundation length	10	m	
Bldg foundation width	10	m	
Bldg occupied height	2.44	m	
Occupied depth below ground	0.15	m	
Air exchange rate	0.6	hr ⁻¹	
Crack radius	1E-03	m	
Distance from contaminated soil to foundation	0.001	m	
Soil gas entry flow rate (Q _{soil})	5	L/min	
Off-Site Residential			
Bldg foundation thickness	0.1	m	
Bldg foundation length	10	m	
Bldg foundation width	10	m	
Bldg occupied height	3.66	m	
Occupied depth below ground	2	m	
Air exchange rate	0.18	hr ⁻¹	
Crack radius	1E-03	m	
Distance from contaminated soil to foundation	0.001	m	
Soil gas entry flow rate (Q _{soil})	5	L/min	

Attachment 1

Table 3:

High-End Exposure Factors

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

		Resident Age 0-2	Resident Age 2-6	Resident Age 6-16	Resident Age 16-26	Routine Worker	Maintenance Worker	Construction Worker
Soil Ingestion								
Ingestion Rate (mg/d)	IR	100	100	50	50	50	100	200
Conversion Factor (kg/mg)	CF	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06
Fraction Contacted (unitless)	FC	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Exposure Frequency (d/yr)	EF	250	250	250	250	180	30	250
Exposure Duration (yr)	ED	2	4	10	10	25	10	1
Body Weight (kg-bw)	BW	15	15	80	80	80	80	80
Averaging Time, carc (d)	AT _c	25,550	25,550	25,550	25,550	25,550	25,550	25,550
Averaging Time, noncarc (d)	AT _{nc}	9,490	9,490	9,490	9,490	9,125	3,650	365

Soil Dermal Contact								
Adherence Factor (mg/cm ²)	AD	0.2	0.2	0.07	0.07	0.12	0.12	0.12
Skin Surface Area (cm ² /d)	SA	2,373	2,373	6,032	6,032	3,527	3,527	3,527
Conversion Factor (kg/mg)	CF	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06
Fraction Contacted (unitless)	FC	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Exposure Frequency (d/yr)	EF	250	250	250	250	180	30	250
Exposure Duration (yr)	ED	2	4	10	10	25	10	1
Body Weight (kg-bw)	BW	15	15	80	80	80	80	80
Averaging Time, carc (d)	AT _c	25,550	25,550	25,550	25,550	25,550	25,550	25,550
Averaging Time, noncarc (d)	AT _{nc}	9,490	9,490	9,490	9,490	9,125	3,650	365

Outdoor Air Inhalation of Soil Vapor and/or Particulates								
Exposure Time (h/d)	ET	24	24	24	24	8	8	8
Exposure Frequency (d/yr)	EF	250	250	250	250	180	30	250
Exposure Duration (yr)	ED	2	4	10	10	25	10	1
Averaging Time, carc (h)	AT _c	613,200	613,200	613,200	613,200	613,200	613,200	613,200
Averaging Time, noncarc (h)	AT _{nc}	227,760	227,760	227,760	227,760	219,000	87,600	8,760

Incidental Groundwater Ingestion								
Ingestion Rate (L/hr)	DR						0.005	0.005
Exposure Time (h/d)	ET						2	2
Exposure Frequency (d/yr)	EF						15	15
Exposure Duration (yr)	ED						10	1
Body Weight (kg-bw)	BW						80	80
Averaging Time, carc (d)	AT _c						25,550	25,550
Averaging Time, noncanc (d)	AT _{nc}						3,650	365

Groundwater Dermal Contact								
Event Time (hr)	t						2	2
Skin Surface Area (cm ²)	SA						3,527	3,527
Events per Day (event/d)	EV						1	1
Exposure Frequency (d/yr)	EF						15	15
Exposure Duration (yr)	ED						10	1
Body Weight (kg)	BW						80	80
Averaging Time, cancer (days)	AT _c						25,550	25,550
Averaging Time, noncancer (days)	AT _{nc}						3,650	365

Outdoor Groundwater Vapor Inhalation								
Exposure Time (h/d)	ET	24	24	24	24	8	8	8
Exposure Frequency (d/yr)	EF	250	250	250	250	180	15	15
Exposure Duration (yr)	ED	2	4	10	10	25	10	1
Averaging Time, carc (h)	AT _c	613,200	613,200	613,200	613,200	613,200	613,200	613,200
Averaging Time, noncarc (h)	AT _{nc}	227,760	227,760	227,760	227,760	219,000	87,600	8,760

Indoor Soil and/or Groundwater Vapor Inhalation								
Exposure Time (h/d)	ET	24	24	24	24	8		
Exposure Frequency (d/yr)	EF	350	350	350	350	250		
Exposure Duration (yr)	ED	2	4	10	10	25		
Averaging Time, carc (h)	AT _c	613,200	613,200	613,200	613,200	613,200		
Averaging Time, noncarc (h)	AT _{nc}	227,760	227,760	227,760	227,760	219,000		

Attachment 1

Table 4:

Site-Specific Risk Based Screening Levels (Target Risk of 1x10⁻⁵ and HQ of 0.1)

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Soil				Groundwater					
			Routine Worker Direct Contact (mg/kg)	Routine Worker Vapor Intrusion (mg/kg)	Construction Worker Direct Contact (mg/kg)	Soil MtGW (mg/kg)	Nonpotable Groundwater Use (mg/L)	Routine Worker Volatilization to Outdoor Air (mg/L)	Routine Worker Vapor Intrusion (mg/L)	Construction Worker Direct Contact (mg/L)	Off-Site Resident Vapor Intrusion (mg/L)	Groundwater MTSW (mg/L)
VOC	Benzene	71-43-2	6.3E+01	4.6E-01	8.7E+00	9.8E+01	3.0E-01	5.5E+02	3.8E+00	4.0E+00	2.5E-01	1.3E+02
VOC	Cumene	98-82-8	1.0E+03	6.1E+00	8.7E+01	1.0E+03	3.7E+01	9.1E+03	6.3E+01	3.0E+01	4.0E+00	2.6E+00
VOC	1,2-Dibromoethane	106-93-4	1.2E+00	7.1E-03	1.8E+00	3.2E+00	1.7E-02	1.6E+01	1.1E-01	9.1E-01	7.9E-03	NSW
VOC	1,2-Dichloroethane	107-06-2	1.6E+01	1.1E-01	8.1E+00	3.3E+01	3.3E-01	1.7E+02	1.2E+00	4.9E+00	8.2E-02	3.1E+03
VOC	Ethyl Benzene	100-41-4	2.3E+03	1.5E+01	1.3E+03	8.2E+02	2.0E+00	2.2E+04	1.5E+02	4.0E+01	9.7E+00	1.3E+01
VOC	Methyl tert-butyl ether	1634-04-4	2.4E+03	1.6E+01	3.9E+02	5.9E+03	2.1E+01	2.9E+04	2.1E+02	1.9E+02	1.5E+01	1.1E+04
VOC	Toluene	108-88-3	8.0E+03	7.6E+01	6.5E+02	9.8E+03	2.5E+01	1.0E+05	7.0E+02	2.0E+02	4.5E+01	5.2E+01
VOC	1,2,4-Trimethylbenzene	95-63-6	1.8E+02	9.2E-01	7.0E+01	2.5E+02	8.7E+00	1.4E+03	9.7E+00	1.5E+01	6.3E-01	3.3E+01
VOC	1,3,5-Trimethylbenzene	108-67-8	2.2E+02	9.2E-01	9.9E+01	2.4E+02	8.8E+00	1.3E+03	9.1E+00	1.5E+01	5.9E-01	7.1E+01
VOC	Xylenes (total)	1330-20-7	2.4E+02	1.5E+00	5.1E+01	3.4E+02	3.7E+00	1.9E+03	1.3E+01	1.7E+01	8.6E-01	2.1E+02
SVOC	Acenaphthene	83-32-9	9.3E+03	WIT	9.2E+03	NA	5.7E+01	WIT	WIT	3.9E+03	WIT	9.0E+00
SVOC	Anthracene	120-12-7	4.6E+04	WIT	4.6E+04	NA	2.4E-02	WIT	WIT	1.9E+04	WIT	4.0E+01
SVOC	Benzo(a)anthracene	56-55-3	4.3E+02	NV	3.2E+03	NA	1.0E-01	NV	NV	1.4E+03	NV	1.3E-02
SVOC	Benzo(a)pyrene	50-32-8	4.3E+01	NV	7.7E+00	NA	1.0E-02	NV	NV	5.8E+00	NV	1.3E-03
SVOC	Benzo(b)fluoranthene	205-99-2	4.3E+02	NV	3.2E+03	NA	1.6E-01	NV	NV	1.4E+03	NV	1.3E-02
SVOC	Benzo(g,h,i)perylene	191-24-2	4.6E+03	NV	1.4E+04	NA	4.4E+01	NV	NV	5.8E+03	NV	1.2E-02
SVOC	Benzo(k)fluoranthene	207-08-9	4.3E+03	NV	3.2E+04	NA	9.9E-01	NV	NV	1.4E+04	NV	1.3E-01
SVOC	Chrysene	218-01-9	4.3E+04	NV	3.2E+05	NA	1.6E+01	NV	NV	1.4E+05	NV	1.3E+00
SVOC	Dibenz(a,h)anthracene	53-70-3	4.3E+01	NV	3.2E+02	NA	9.8E-03	NV	NV	1.4E+02	NV	1.3E-03
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	2.0E-01	NV	1.3E+00	2.0E+00	3.9E-05	NV	NV	5.5E-01	NV	NSW
SVOC	Ethanol	64-17-5	1.0E+06	NV	1.0E+06	1.0E+06	1.0E+04	NV	NV	8.3E+05	NV	NSW
SVOC	Fluorene	86-73-7	6.2E+03	WIT	1.8E+04	NA	9.7E+01	WIT	WIT	7.8E+03	WIT	7.0E+00
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	4.3E+02	NV	3.2E+03	NA	1.0E-01	NV	NV	1.4E+03	NV	1.3E-02
SVOC	Naphthalene	91-20-3	4.1E+01	5.4E-01	6.0E+00	2.7E+01	3.9E-01	1.2E+02	8.8E-01	2.8E-01	6.7E-02	4.3E+01
SVOC	Phenanthrene	85-01-8	4.6E+03	WIT	1.4E+04	NA	7.3E+01	WIT	WIT	5.8E+03	WIT	1.0E+00
SVOC	Pyrene	129-00-0	4.6E+03	NV	1.4E+04	NA	5.0E+01	NV	NV	5.8E+03	NV	3.0E+00
SVOC	Tetraethylene Glycol	112-60-7	3.5E+05	NV	9.6E+04	1.2E+05	2.9E+02	NV	NV	3.9E+04	NV	1.9E+05
PCB	PCBs (total)	1336-36-3	3.0E+00	NV	2.3E+00	NA	1.5E-02	NV	NV	9.7E-01	NV	6.4E-04
INORG	Antimony	7440-36-0	1.3E+02	NV	2.3E+01	2.0E+01	2.2E-02	NV	NV	1.4E+00	NV	6.4E+01
INORG	Arsenic	7440-38-2	7.1E+01	NV	1.0E+02	1.2E+01	2.1E-02	NV	NV	5.3E+01	NV	1.4E+00
INORG	Chromium III	16065-83-1	4.6E+05	NV	2.9E+04	1.0E+06	1.1E+01	NV	NV	5.3E+02	NV	7.4E+01
INORG	Chromium VI	18540-29-9	1.8E+02	NV	2.8E+02	1.5E+00	3.9E-03	NV	NV	1.7E+00	NV	1.1E+01
INORG	Cyanide (total)	57-12-5	1.5E+01	8.6E-01	8.8E+00	9.9E+00	3.0E-01	2.4E+01	2.4E-01	2.6E-01	2.5E-02	4.0E+01
INORG	Lead	7439-92-1	2.5E+03	NV	2.5E+03	4.5E+04	IE	NV	NV	IE	NV	2.5E+00
INORG	Nickel	7440-02-0	6.2E+03	NV	7.0E+02	1.7E+03	1.3E+00	NV	NV	8.6E+01	NV	5.2E+01
INORG	Vanadium	7440-62-2	1.6E+03	NV	3.5E+02	2.8E+03	1.4E-01	NV	NV	6.9E+00	NV	1.0E+02

Abbreviations:

Chem Group - chemical group

INORG - metals

SVOC - semi-volatile organic compounds

VOC - volatile organic compounds

MtGW - migration to groundwater

MTSW - migration to surface water

NV - not volatile

WIT - without inhalation toxicity data

NA - not applicable: target groundwater concentration times DAF is greater than constituent's solubility.

IE - inadequate exposure

NSW - no surface water quality criteria available

Attachment 2

Routine Worker Risk Based Screening Level Calculations

Table 1 – Normalized Average Vapor Flux from Soil to Outdoor Air

Table 2 – Soil PM₁₀ Emission from Wind Erosion

Table 3 – Dispersion Factor to Outdoor Air

Table 4 – Concentrations in Outdoor Air from Soil

Table 5a – Unit Risk and Cancer-Based RBSLs for Exposure of Routine Workers to Soil

Table 5b – Unit HQ and Noncancer-Based RBSLs for Exposure of Routine Workers to Soil

Figure 1 – Soil Moisture Profile for Default PADEP Nonresidential Building (Slab-On-Grade)

Table 6 – Normalized Indoor Air Concentrations in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Soil

Table 7 – Unit Risk, Unit HQ, and RBSLs for Soil Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Table 8 – Normalized Vapor Flux to Outdoor Air from Groundwater

Table 9 – Unit Risk, Unit HQ, and RBSLs for Exposure of Routine Workers to Groundwater-derived Vapors in Outdoor Air

Table 10 – Normalized Indoor Air Concentrations in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Groundwater

Table 11 – Unit Risk, Unit HQ, and RBSLs for Groundwater Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Table 12 – Blood Lead Model for Adult Exposure to Lead in Soil



Attachment 2

Table 1:

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	D _{air} (m ² /d)	D _{water} (m ² /d)	D _G (m ² /d)	D _L (m ² /d)	D _E (m ² /d)	J _v (kg/m ² -s)
VOC	Benzene	71-43-2	5.82E+01		1.68E-01	7.60E-01	8.47E-05	1.23E-01	3.46E-08	3.51E-02	1.11E-05
VOC	Cumene	98-82-8	7.05E+02		3.28E-01	5.62E-01	6.13E-05	9.10E-02	2.51E-08	4.96E-03	9.32E-06
VOC	1,2-Dibromoethane	106-93-4	2.22E+01		2.37E-02	3.72E-01	7.29E-05	6.02E-02	2.98E-08	5.83E-03	9.53E-06
VOC	1,2-Dichloroethane	107-06-2	1.75E+01		2.92E-02	8.99E-01	8.55E-05	1.46E-01	3.50E-08	2.04E-02	1.07E-05
VOC	Ethyl Benzene	100-41-4	3.67E+02		2.20E-01	6.48E-01	6.74E-05	1.05E-01	2.76E-08	7.27E-03	9.80E-06
VOC	Methyl tert-butyl ether	1634-04-4	1.15E+01		1.83E-02	7.42E-01	8.73E-05	1.20E-01	3.57E-08	1.43E-02	1.05E-05
VOC	Toluene	108-88-3	1.80E+02		1.93E-01	7.52E-01	7.43E-05	1.22E-01	3.04E-08	1.46E-02	1.05E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	8.97E+02		1.61E-01	5.24E-01	6.84E-05	8.48E-02	2.80E-08	1.81E-03	7.67E-06
VOC	1,3,5-Trimethylbenzene	108-67-8	1.76E+03		1.54E-01	5.20E-01	7.49E-05	8.42E-02	3.06E-08	8.81E-04	6.17E-06
VOC	Xylenes (total)	1330-20-7	3.86E+02		2.52E-01	6.74E-01	7.56E-05	1.09E-01	3.09E-08	8.23E-03	9.94E-06
SVOC	Acenaphthene	83-32-9	7.14E+03		3.40E-03	3.64E-01	6.64E-05	5.89E-02	2.72E-08	3.38E-06	4.17E-07
SVOC	Anthracene	120-12-7	2.97E+04		1.30E-03	2.80E-01	6.69E-05	4.53E-02	2.74E-08	2.40E-07	1.11E-07
SVOC	Benzo(a)anthracene	56-55-3	4.01E+05		5.55E-05	4.41E-01	7.78E-05	7.14E-02	3.18E-08	1.20E-09	
SVOC	Benzo(a)pyrene	50-32-8	1.01E+06		1.49E-05	3.72E-01	7.78E-05	6.02E-02	3.18E-08	1.11E-10	
SVOC	Benzo(b)fluoranthene	205-99-2	1.24E+06		1.66E-03	1.95E-01	4.80E-05	3.16E-02	1.97E-08	5.08E-09	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.28E+07		1.10E-05	1.88E-01	4.54E-05	3.04E-02	1.86E-08	3.32E-12	
SVOC	Benzo(k)fluoranthene	207-08-9	1.24E+06		1.16E-05	1.95E-01	4.80E-05	3.16E-02	1.97E-08	3.73E-11	
SVOC	Chrysene	218-01-9	4.01E+05		1.48E-03	2.14E-01	5.37E-05	3.47E-02	2.20E-08	1.54E-08	
SVOC	Dibenz(a,h)anthracene	53-70-3	3.77E+06		9.57E-08	1.75E-01	4.48E-05	2.83E-02	1.83E-08	6.71E-13	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	5.03E+05		1.03E-06	6.91E-01	6.91E-05	1.12E-01	2.83E-08	3.45E-11	
SVOC	Ethanol	64-17-5	6.81E-01		1.96E-04	1.06E+00	1.12E-04	1.72E-01	4.60E-08	5.71E-04	
SVOC	Fluorene	86-73-7	1.38E+04		1.39E-03	3.14E-01	6.81E-05	5.08E-02	2.79E-08	6.17E-07	1.78E-07
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.45E+06		2.03E-05	1.64E-01	4.89E-05	2.66E-02	2.00E-08	1.96E-11	
SVOC	Naphthalene	91-20-3	2.01E+03		1.20E-02	5.10E-01	6.48E-05	8.26E-02	2.65E-08	5.94E-05	1.75E-06
SVOC	Phenanthrene	85-01-8	2.42E+04		1.41E-03	3.24E-01	6.45E-05	5.25E-02	2.64E-08	3.67E-07	1.37E-07
SVOC	Pyrene	129-00-0	1.06E+05		2.00E-04	2.35E-01	6.26E-05	3.81E-02	2.56E-08	8.73E-09	
SVOC	Tetraethylene Glycol	112-60-7	3.00E-02		1.62E-11	4.39E-01	6.96E-05	7.11E-02	2.85E-08	5.30E-07	
PCB	PCBs (total)	1336-36-3	2.45E+06		6.64E-02	1.75E-01	4.32E-05	2.83E-02	1.77E-08	9.22E-08	
INORG	Antimony	7440-36-0		4.50E+01							
INORG	Arsenic	7440-38-2		2.90E+01							
INORG	Chromium III	16065-83-1		1.80E+06							
INORG	Chromium VI	18540-29-9		1.90E+01							
INORG	Cyanide (total)	57-12-5		9.90E+00	1.97E-03	1.35E+00	1.53E-04	2.18E-01	6.26E-08	2.61E-05	1.16E-06
INORG	Lead	7439-92-1		9.00E+02							
INORG	Nickel	7440-02-0		6.50E+01							
INORG	Vanadium	7440-62-2		1.00E+03							

Attachment 2

Table 1:

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

Soil bulk density	kg/L	ρ_b	1.66
Soil porosity	L/L-soil	θ	0.38
Soil water content	L/L-soil	θ_w	0.05
Soil air-filled porosity	L/L-soil	θ_a	0.32
Soil organic carbon fraction	unitless	f_{oc}	0.005
Averaging period (Exposure Duration)	years	T	25
	days	T	9125
Temperature	$^{\circ}\text{C}$	Temp	18
Clean soil above source	m	Z_1	
Bottom of source depth	m	Z_2	5.79

Based on the volatilization model developed by Jury et. al. (1983) for finite sources as described in USEPA's (1996) Soil Screening Guidance: Technical Background Document. The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 2

Table 2:

Soil PM₁₀ Emission from Wind Erosion

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Unlimited Reservoir Model

Parameter	Units	Variable	Value
Aerodynamic particle size multiplier			0.036
Ground cover fraction		G	0.5
Mode of aggregate size distribution	mm		0.50
Threshold friction velocity	m/s	u'_t	0.50
Correction factor			1.25
Corrected friction velocity	m/s	u*_t	0.6252
Roughness height	m	z₀	0.005
Anemometer height	m		8.0
Friction velocity at anemometer height	m/s	u_t	11.53
Mean annual wind speed	mph	u_m	9.3
Mean annual wind speed	m/s	u_m	4.16
u_m/u_t			0.361
$x = 0.886 u_t/u_m$			2.46
F(x)			0.064
Annual average PM₁₀ flux	kg-soil/m²-s	J_{10,w}	1.5E-11

Model described in more detail in USEPA's (1996) *Soil Screening Guidance: Technical Background Document* .

Attachment 2

Table 3:

Dispersion Factor to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Parameter	Units	Value
Correlation coefficient city		Philadelphia
Correlation coefficient A		14.0111
Correlation coefficient B		19.6154
Correlation coefficient C		225.3397

Soil source area	acres	70.6
		Annual
Soil C/Q averaging time		Max
Conversion factor from 1-Hr Max for soil		0.19
C/Q for soil	(kg/m³)/(kg/m²-s)	25.06

Groundwater source area	acres	70.6000
		Annual
Groundwater averaging time for C/Q		Max
Conversion factor from 1-Hr Max for groundwater		0.19
C/Q for Groundwater	(L/m³)/(L/m²-s)	25.06

Note:

C/Q is estimated using the empirical correlation in USEPA's (2002) Supplemental Soil Screening Guidance.

Attachment 2

Table 4:

Concentrations in Outdoor Air from Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Chem	Chemical	CASRN	Vapor		PM ₁₀	
			C _{soil} (mg/kg)	C _{air} (mg/m ³)	C _{soil} (mg/kg)	C _{air} (mg/m ³)
			C/Q (kg/m ³ per kg/m ² -s): 2.5E+01			
VOC	Benzene	71-43-2	1.00E+00	2.78E-04	1.00E+00	3.73E-10
VOC	Cumene	98-82-8	1.00E+00	2.34E-04	1.00E+00	3.73E-10
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	2.39E-04	1.00E+00	3.73E-10
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	2.69E-04	1.00E+00	3.73E-10
VOC	Ethyl Benzene	100-41-4	1.00E+00	2.46E-04	1.00E+00	3.73E-10
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	2.62E-04	1.00E+00	3.73E-10
VOC	Toluene	108-88-3	1.00E+00	2.63E-04	1.00E+00	3.73E-10
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	1.92E-04	1.00E+00	3.73E-10
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	1.55E-04	1.00E+00	3.73E-10
VOC	Xylenes (total)	1330-20-7	1.00E+00	2.49E-04	1.00E+00	3.73E-10
SVOC	Acenaphthene	83-32-9	1.00E+00	1.04E-05	1.00E+00	3.73E-10
SVOC	Anthracene	120-12-7	1.00E+00	2.78E-06	1.00E+00	3.73E-10
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		1.00E+00	3.73E-10
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		1.00E+00	3.73E-10
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		1.00E+00	3.73E-10
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		1.00E+00	3.73E-10
SVOC	Benzo(k)fluoranthene	207-08-9	1.00E+00		1.00E+00	3.73E-10
SVOC	Chrysene	218-01-9	1.00E+00		1.00E+00	3.73E-10
SVOC	Dibenz(a,h)anthracene	53-70-3	1.00E+00		1.00E+00	3.73E-10
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	1.00E+00		1.00E+00	3.73E-10
SVOC	Ethanol	64-17-5	1.00E+00		1.00E+00	3.73E-10
SVOC	Fluorene	86-73-7	1.00E+00	4.47E-06	1.00E+00	3.73E-10
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		1.00E+00	3.73E-10
SVOC	Naphthalene	91-20-3	1.00E+00	4.38E-05	1.00E+00	3.73E-10
SVOC	Phenanthrene	85-01-8	1.00E+00	3.44E-06	1.00E+00	3.73E-10
SVOC	Pyrene	129-00-0	1.00E+00		1.00E+00	3.73E-10
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		1.00E+00	3.73E-10
PCB	PCBs (total)	1336-36-3	1.00E+00		1.00E+00	3.73E-10
INORG	Antimony	7440-36-0	1.00E+00		1.00E+00	3.73E-10
INORG	Arsenic	7440-38-2	1.00E+00		1.00E+00	3.73E-10
INORG	Chromium III	16065-83-1	1.00E+00		1.00E+00	3.73E-10
INORG	Chromium VI	18540-29-9	1.00E+00		1.00E+00	3.73E-10
INORG	Cyanide (total)	57-12-5	1.00E+00	2.90E-05	1.00E+00	3.73E-10
INORG	Lead	7439-92-1	1.00E+00		1.00E+00	3.73E-10
INORG	Nickel	7440-02-0	1.00E+00		1.00E+00	3.73E-10
INORG	Vanadium	7440-62-2	1.00E+00		1.00E+00	3.73E-10

Attachment 2

Table 5a:

Unit Risk and Cancer-Based RBSLs for Exposure of Routine Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	C _{soil} (mg/kg)	Soil Ingestion					Soil Dermal Contact					Soil Vapor Inhalation				Soil Particulate Inhalation				All Routes	
					RBA	LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	Risk	RBSL (mg/kg)	ABS _{derm}	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	Risk	RBSL (mg/kg)	C _{air} (mg/m ³)	URF (m ³ /mg)	Risk	RBSL (mg/kg)	C _{air} (mg/m ³)	URF (m ³ /mg) ⁻¹	Risk	RBSL (mg/kg)	Risk	RBSL (mg/kg)
VOC	Benzene	71-43-2	A	1.00E+00		1.10E-07	5.5E-02	6.1E-09	1.7E+03			5.5E-02			2.78E-04	7.8E-03	1.3E-07	7.9E+01	3.73E-10	7.8E-03	1.7E-13	5.8E+07	1.3E-07	7.5E+01
VOC	Cumene	98-82-8	D	1.00E+00		1.10E-07								2.34E-04				3.73E-10						
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00		1.10E-07	2.0E+00	2.2E-07	4.5E+01			2.0E+00		2.39E-04	6.0E-01	8.4E-06	1.2E+00	3.73E-10	6.0E-01	1.3E-11	7.6E+05	8.6E-06	1.2E+00	
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00		1.10E-07	9.1E-02	1.0E-08	1.0E+03			9.1E-02		2.69E-04	2.6E-02	4.1E-07	2.4E+01	3.73E-10	2.6E-02	5.7E-13	1.8E+07	4.2E-07	2.4E+01	
VOC	Ethyl Benzene	100-41-4	D	1.00E+00		1.10E-07								2.46E-04				3.73E-10						
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00		1.10E-07	1.8E-03	2.0E-10	5.0E+04			1.8E-03		2.62E-04	2.6E-04	4.0E-09	2.5E+03	3.73E-10	2.6E-04	5.7E-15	1.8E+09	4.2E-09	2.4E+03	
VOC	Toluene	108-88-3	ID	1.00E+00		1.10E-07								2.63E-04				3.73E-10						
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00		1.10E-07								1.92E-04				3.73E-10						
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00		1.10E-07								1.55E-04				3.73E-10						
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00		1.10E-07								2.49E-04				3.73E-10						
SVOC	Acenaphthene	83-32-9	ID	1.00E+00		1.10E-07				1.30E-01	1.21E-07			1.04E-05				3.73E-10						
SVOC	Anthracene	120-12-7	ID	1.00E+00		1.10E-07				1.30E-01	1.21E-07			2.78E-06				3.73E-10						
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		1.10E-07	1.0E-01	1.1E-08	9.1E+02	1.30E-01	1.21E-07	1.0E-01	1.2E-08	8.3E+02		6.0E-02		3.73E-10	6.0E-02	1.3E-12	7.6E+06	2.3E-08	4.3E+02	
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		1.10E-07	1.0E+00	1.1E-07	9.1E+01	1.30E-01	1.21E-07	1.0E+00	1.2E-07	8.3E+01		6.0E-01		3.73E-10	6.0E-01	1.3E-11	7.6E+05	2.3E-07	4.3E+01	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		1.10E-07	1.0E-01	1.1E-08	9.1E+02	1.30E-01	1.21E-07	1.0E-01	1.2E-08	8.3E+02		6.0E-02		3.73E-10	6.0E-02	1.3E-12	7.6E+06	2.3E-08	4.3E+02	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00		1.10E-07				1.30E-01	1.21E-07							3.73E-10						
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.00E+00		1.10E-07	1.0E-02	1.1E-09	9.1E+03	1.30E-01	1.21E-07	1.0E-02	1.2E-09	8.3E+03		6.0E-03		3.73E-10	6.0E-03	1.3E-13	7.6E+07	2.3E-09	4.3E+03	
SVOC	Chrysene	218-01-9	B2	1.00E+00		1.10E-07	1.0E-03	1.1E-10	9.1E+04	1.30E-01	1.21E-07	1.0E-03	1.2E-10	8.3E+04		6.0E-04		3.73E-10	6.0E-04	1.3E-14	7.6E+08	2.3E-10	4.3E+04	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.00E+00		1.10E-07	1.0E+00	1.1E-07	9.1E+01	1.30E-01	1.21E-07	1.0E+00	1.2E-07	8.3E+01		6.0E-01		3.73E-10	6.0E-01	1.3E-11	7.6E+05	2.3E-07	4.3E+01	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	C	1.00E+00		1.10E-07	2.5E+02	2.8E-05	3.6E-01	1.00E-01	9.32E-08	2.5E+02	2.3E-05	4.3E-01		7.1E+01		3.73E-10	7.1E+01	1.6E-09	6.4E+03	5.1E-05	2.0E-01	
SVOC	Ethanol	64-17-5		1.00E+00		1.10E-07												3.73E-10						
SVOC	Fluorene	86-73-7	D	1.00E+00		1.10E-07				1.30E-01	1.21E-07			4.47E-06				3.73E-10						
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		1.10E-07	1.0E-01	1.1E-08	9.1E+02	1.30E-01	1.21E-07	1.0E-01	1.2E-08	8.3E+02		6.0E-02		3.73E-10	6.0E-02	1.3E-12	7.6E+06	2.3E-08	4.3E+02	
SVOC	Naphthalene	91-20-3	C	1.00E+00		1.10E-07	1.2E-01	1.3E-08	7.6E+02	1.30E-01	1.21E-07	1.2E-01	1.5E-08	6.9E+02	4.38E-05	3.4E-02	8.7E-08	1.1E+02	3.73E-10	3.4E-02	7.5E-13	1.3E+07	1.2E-07	8.7E+01
SVOC	Phenanthrene	85-01-8	D	1.00E+00		1.10E-07				1.30E-01	1.21E-07			3.44E-06				3.73E-10						
SVOC	Pyrene	129-00-0	NC	1.00E+00		1.10E-07				1.30E-01	1.21E-07							3.73E-10						
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00		1.10E-07				1.00E-01	9.32E-08							3.73E-10						
PCB	PCBs (total)	1336-36-3	B2	1.00E+00		1.10E-07	2.0E+00	2.2E-07	4.5E+01	1.40E-01	1.30E-07	2.0E+00	2.6E-07	3.8E+01		5.7E-01		3.73E-10	5.7E-01	1.3E-11	8.0E+05	4.8E-07	2.1E+01	
INORG	Antimony	7440-36-0	ID	1.00E+00		1.10E-07												3.73E-10						
INORG	Arsenic	7440-38-2	A	1.00E+00	0.6	1.10E-07	1.5E+00	9.9E-08	1.0E+02	3.00E-02	2.80E-08	1.5E+00	4.2E-08	2.4E+02		4.3E+00		3.73E-10	4.3E+00	9.4E-11	1.1E+05	1.4E-07	7.1E+01	
INORG	Chromium III	16065-83-1	D	1.00E+00		1.10E-07												3.73E-10						
INORG	Chromium VI	18540-29-9	A	1.00E+00		1.10E-07	5.0E-01	5.5E-08	1.8E+02			2.0E+01				1.2E+01		3.73E-10	1.2E+01	2.6E-10	3.8E+04	5.5E-08	1.8E+02	
INORG	Cyanide (total)	57-12-5		1.00E+00		1.10E-07								2.90E-05				3.73E-10						
INORG	Lead	7439-92-1	B2	1.00E+00		1.10E-07												3.73E-10						
INORG	Nickel	7440-02-0	A	1.00E+00		1.10E-07									2.4E-01			3.73E-10	2.4E-01	5.3E-12	1.9E+06	5.3E-12	1.9E+06	
INORG	Vanadium	7440-62-2	ID	1.00E+00		1.10E-07												3.73E-10						

Notes:

Cancer RBSLs are calculated at a target cancer risk of 1E-05.

Attachment 2

Table 5b:

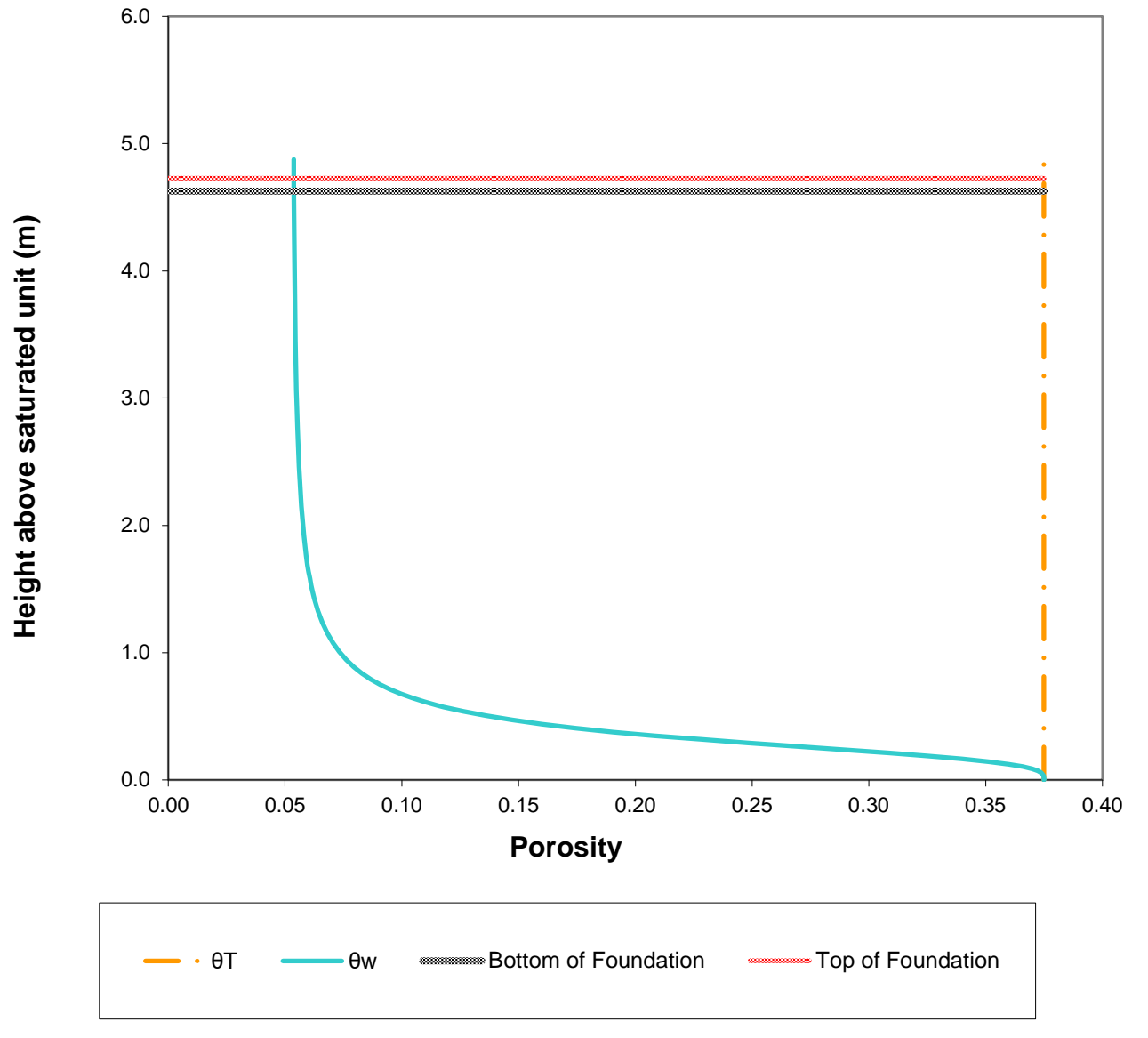
Unit HQ and Noncancer-Based RBSLs for Exposure of Routine Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{soil} (mg/kg)	Soil Ingestion					Soil Dermal Contact					Soil Vapor Inhalation				Soil Particulate Inhalation				All Routes		
				RBA	ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	RBSL (mg/kg)	ABS _{derm}	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	RBSL (mg/kg)	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	RBSL (mg/kg)	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	RBSL (mg/kg)	HQ	RBSL (mg/kg)	
VOC	Benzene	71-43-2	1.00E+00		3.08E-07	4.0E-03	7.7E-05	1.3E+03				4.0E-03			2.78E-04	3.0E-02	1.5E-03	6.6E+01	3.73E-10	3.0E-02	2.0E-09	4.9E+07	1.6E-03	6.3E+01
VOC	Cumene	98-82-8	1.00E+00		3.08E-07	1.0E-01	3.1E-06	3.2E+04				1.0E-01			2.34E-04	4.0E-01	9.6E-05	1.0E+03	3.73E-10	4.0E-01	1.5E-10	6.5E+08	9.9E-05	1.0E+03
VOC	1,2-Dibromoethane	106-93-4	1.00E+00		3.08E-07	9.0E-03	3.4E-05	2.9E+03				9.0E-03			2.39E-04	9.0E-03	4.4E-03	2.3E+01	3.73E-10	9.0E-03	6.8E-09	1.5E+07	4.4E-03	2.3E+01
VOC	1,2-Dichloroethane	107-06-2	1.00E+00		3.08E-07	6.0E-03	5.1E-05	1.9E+03				6.0E-03			2.69E-04	7.0E-03	6.3E-03	1.6E+01	3.73E-10	7.0E-03	8.8E-09	1.1E+07	6.4E-03	1.6E+01
VOC	Ethyl Benzene	100-41-4	1.00E+00		3.08E-07	1.0E-01	3.1E-06	3.2E+04				1.0E-01			2.46E-04	1.0E+00	4.0E-05	2.5E+03	3.73E-10	1.0E+00	6.1E-11	1.6E+09	4.3E-05	2.3E+03
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00		3.08E-07	3.0E-01	1.0E-06	9.7E+04				3.0E-01			2.62E-04	3.0E+00	1.4E-05	7.0E+03	3.73E-10	3.0E+00	2.0E-11	4.9E+09	1.5E-05	6.5E+03
VOC	Toluene	108-88-3	1.00E+00		3.08E-07	8.0E-02	3.9E-06	2.6E+04				8.0E-02			2.63E-04	5.0E+00	8.6E-06	1.2E+04	3.73E-10	5.0E+00	1.2E-11	8.1E+09	1.2E-05	8.0E+03
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00		3.08E-07	1.0E-02	3.1E-05	3.2E+03				1.0E-02			1.92E-04	6.0E-02	5.3E-04	1.9E+02	3.73E-10	6.0E-02	1.0E-09	9.8E+07	5.6E-04	1.8E+02
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00		3.08E-07	1.0E-02	3.1E-05	3.2E+03				1.0E-02			1.55E-04	6.0E-02	4.2E-04	2.4E+02	3.73E-10	6.0E-02	1.0E-09	9.8E+07	4.5E-04	2.2E+02
VOC	Xylenes (total)	1330-20-7	1.00E+00		3.08E-07	2.0E-01	1.5E-06	6.5E+04				2.0E-01			2.49E-04	1.0E-01	4.1E-04	2.4E+02	3.73E-10	1.0E-01	6.1E-10	1.6E+08	4.1E-04	2.4E+02
SVOC	Acenaphthene	83-32-9	1.00E+00		3.08E-07	6.0E-02	5.1E-06	1.9E+04	1.30E-01	3.39E-07	6.0E-02	5.7E-06	1.8E+04	1.04E-05					3.73E-10				1.1E-05	9.3E+03
SVOC	Anthracene	120-12-7	1.00E+00		3.08E-07	3.0E-01	1.0E-06	9.7E+04	1.30E-01	3.39E-07	3.0E-01	1.1E-06	8.8E+04	2.78E-06					3.73E-10				2.2E-06	4.6E+04
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		3.08E-07				1.30E-01	3.39E-07									3.73E-10					
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		3.08E-07	3.0E-04	1.0E-03	9.7E+01	1.30E-01	3.39E-07	3.0E-04	1.1E-03	8.8E+01		2.0E-06				3.73E-10	2.0E-06	3.1E-05	3.3E+03	2.2E-03	4.6E+01
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		3.08E-07				1.30E-01	3.39E-07									3.73E-10					
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		3.08E-07	3.0E-02	1.0E-05	9.7E+03	1.30E-01	3.39E-07	3.0E-02	1.1E-05	8.8E+03					3.73E-10				2.2E-05	4.6E+03	
SVOC	Benzo(k)fluoranthene	207-08-9	1.00E+00		3.08E-07				1.30E-01	3.39E-07									3.73E-10					
SVOC	Chrysene	218-01-9	1.00E+00		3.08E-07				1.30E-01	3.39E-07									3.73E-10					
SVOC	Dibenz(a,h)anthracene	53-70-3	1.00E+00		3.08E-07				1.30E-01	3.39E-07									3.73E-10					
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	1.00E+00		3.08E-07				1.00E-01	2.61E-07									3.73E-10					
SVOC	Ethanol	64-17-5	1.00E+00		3.08E-07	6.2E+01	5.0E-09	2.0E+07				6.2E+01				1.9E+01			3.73E-10	1.9E+01	3.2E-12	3.1E+10	5.0E-09	2.0E+07
SVOC	Fluorene	86-73-7	1.00E+00		3.08E-07	4.0E-02	7.7E-06	1.3E+04	1.30E-01	3.39E-07	4.0E-02	8.5E-06	1.2E+04	4.47E-06					3.73E-10				1.6E-05	6.2E+03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		3.08E-07				1.30E-01	3.39E-07									3.73E-10					
SVOC	Naphthalene	91-20-3	1.00E+00		3.08E-07	2.0E-02	1.5E-05	6.5E+03	1.30E-01	3.39E-07	2.0E-02	1.7E-05	5.9E+03	4.38E-05	3.0E-03	2.4E-03	4.2E+01	3.73E-10	3.0E-03	2.0E-08	4.9E+06	2.4E-03	4.1E+01	
SVOC	Phenanthrene	85-01-8	1.00E+00		3.08E-07	3.0E-02	1.0E-05	9.7E+03	1.30E-01	3.39E-07	3.0E-02	1.1E-05	8.8E+03	3.44E-06				3.73E-10				2.2E-05	4.6E+03	
SVOC	Pyrene	129-00-0	1.00E+00		3.08E-07	3.0E-02	1.0E-05	9.7E+03	1.30E-01	3.39E-07	3.0E-02	1.1E-05	8.8E+03					3.73E-10				2.2E-05	4.6E+03	
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		3.08E-07	2.0E+00	1.5E-07	6.5E+05	1.00E-01	2.61E-07	2.0E+00	1.3E-07	7.7E+05					3.73E-10				2.8E-07	3.5E+05	
PCB	PCBs (total)	1336-36-3	1.00E+00		3.08E-07				1.40E-01	3.65E-07									3.73E-10					
INORG	Antimony	7440-36-0	1.00E+00		3.08E-07	4.0E-04	7.7E-04	1.3E+02			6.0E-05								3.73E-10				7.7E-04	1.3E+02
INORG	Arsenic	7440-38-2	1.00E+00	0.6	3.08E-07	3.0E-04	6.2E-04	1.6E+02	3.00E-02	7.83E-08	3.0E-04	2.6E-04	3.8E+02		1.5E-05				3.73E-10	1.5E-05	4.1E-06	2.4E+04	8.8E-04	1.1E+02
INORG	Chromium III	16065-83-1	1.00E+00		3.08E-07	1.5E+00	2.1E-07	4.9E+05			2.0E-02				5.0E-03				3.73E-10	5.0E-03	1.2E-08	8.1E+06	2.2E-07	4.6E+05
INORG	Chromium VI	18540-29-9	1.00E+00		3.08E-07	3.0E-03	1.0E-04	9.7E+02			7.5E-05				1.0E-04				3.73E-10	1.0E-04	6.1E-07	1.6E+05	1.0E-04	9.7E+02
INORG	Cyanide (total)	57-12-5	1.00E+00		3.08E-07	6.0E-04	5.1E-04	1.9E+02			6.0E-04			2.90E-05	8.0E-04	6.0E-03	1.7E+01	3.73E-10	8.0E-04	7.7E-08	1.3E+06	6.5E-03	1.5E+01	
INORG	Lead	7439-92-1	1.00E+00		3.08E-07														3.73E-10					
INORG	Nickel	7440-02-0	1.00E+00		3.08E-07	2.0E-02	1.5E-05	6.5E+03			8.0E-04				9.0E-05				3.73E-10	9.0E-05	6.8E-07	1.5E+05	1.6E-05	6.2E+03
INORG	Vanadium	7440-62-2	1.00E+00		3.08E-07	5.0E-03	6.2E-05	1.6E+03			1.3E-04				1.0E-04				3.73E-10	1.0E-04	6.1E-07	1.6E+05	6.2E-05	1.6E+03

Notes:
Noncancer RBSLs are calculated at a target HQ of 0.1.

Attachment 2
Figure 1: Soil Moisture Profile for Default PADEP Nonresidential Building (Slab-On-Grade)
PESRM Philadelphia Refining Complex, Philadelphia, Pennsylvania



Attachment 2

Table 6:

Normalized Indoor Air Concentration in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	D _{air} (m ² /day)	D _{water} (m ² /day)	H (unitless)	D _{crack} (m ² /day)	D _{eff} ^T (m ² /day)	α _∞	K _{oc} (L/kg)	K _d (L/kg)	C _{s, vap} (kg-soil/m ³)	C _{b,∞} (kg-soil/m ³)	α _{ML}	C _{b,ML} (kg-soil/m ³)	C _{b, norm} (kg-soil/m ³)
VOC	Benzene	71-43-2	7.60E-01	8.47E-05	1.68E-01	1.23E-01	1.23E-01	2.05E-03	5.82E+01	2.91E-01	4.73E+02	9.69E-01	6.06E-05	2.87E-02	2.87E-02
VOC	Cumene	98-82-8	5.62E-01	6.13E-05	3.28E-01	9.09E-02	9.09E-02	2.05E-03	7.05E+02	3.53E+00	9.05E+01	1.85E-01	3.17E-04	2.87E-02	2.87E-02
VOC	1,2-Dibromoethane	106-93-4	3.72E-01	7.29E-05	2.37E-02	6.02E-02	6.01E-02	2.05E-03	2.22E+01	1.11E-01	1.61E+02	3.29E-01	1.78E-04	2.87E-02	2.87E-02
VOC	1,2-Dichloroethane	107-06-2	8.99E-01	8.55E-05	2.92E-02	1.46E-01	1.45E-01	2.05E-03	1.75E+01	8.74E-02	2.33E+02	4.77E-01	1.23E-04	2.87E-02	2.87E-02
VOC	Ethyl Benzene	100-41-4	6.48E-01	6.74E-05	2.20E-01	1.05E-01	1.05E-01	2.05E-03	3.67E+02	1.84E+00	1.15E+02	2.36E-01	2.49E-04	2.87E-02	2.87E-02
VOC	Methyl tert-butyl ether	1634-04-4	7.42E-01	8.73E-05	1.83E-02	1.20E-01	1.20E-01	2.05E-03	1.15E+01	5.75E-02	1.97E+02	4.03E-01	1.46E-04	2.87E-02	2.87E-02
VOC	Toluene	108-88-3	7.52E-01	7.43E-05	1.93E-01	1.22E-01	1.22E-01	2.05E-03	1.80E+02	9.02E-01	1.98E+02	4.06E-01	1.45E-04	2.87E-02	2.87E-02
VOC	1,2,4-Trimethylbenzene	95-63-6	5.24E-01	6.84E-05	1.61E-01	8.48E-02	8.48E-02	2.05E-03	8.97E+02	4.49E+00	3.54E+01	7.25E-02	8.10E-04	2.87E-02	2.87E-02
VOC	1,3,5-Trimethylbenzene	108-67-8	5.20E-01	7.49E-05	1.54E-01	8.42E-02	8.42E-02	2.05E-03	1.76E+03	8.81E+00	1.74E+01	3.55E-02	1.65E-03	2.87E-02	2.87E-02
VOC	Xylenes (total)	1330-20-7	6.74E-01	7.56E-05	2.52E-01	1.09E-01	1.09E-01	2.05E-03	3.86E+02	1.93E+00	1.25E+02	2.56E-01	2.29E-04	2.87E-02	2.87E-02
SVOC	Acenaphthene	83-32-9	3.64E-01	6.64E-05	3.40E-03	5.89E-02	5.89E-02	2.05E-03	7.14E+03	3.57E+01	9.51E-02	1.95E-04	3.02E-01	2.87E-02	1.95E-04
SVOC	Anthracene	120-12-7	2.80E-01	6.69E-05	1.30E-03	4.54E-02	4.53E-02	2.05E-03	2.97E+04	1.49E+02	8.77E-03	1.80E-05	3.27E+00	2.87E-02	1.80E-05
SVOC	Benzo(a)anthracene	56-55-3	4.41E-01	7.78E-05	5.55E-05	7.19E-02	7.19E-02	2.05E-03	4.01E+05	2.01E+03	2.77E-05	5.67E-08	1.04E+03	2.87E-02	
SVOC	Benzo(a)pyrene	50-32-8	3.72E-01	7.78E-05	1.49E-05	6.23E-02	6.23E-02	2.05E-03	1.01E+06	5.07E+03	2.95E-06	6.03E-09	9.74E+03	2.87E-02	
SVOC	Benzo(b)fluoranthene	205-99-2	1.95E-01	4.80E-05	1.66E-03	3.16E-02	3.16E-02	2.04E-03	1.24E+06	6.22E+03	2.67E-04	5.45E-07	1.08E+02	2.87E-02	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.88E-01	4.54E-05	1.10E-05	3.21E-02	3.21E-02	2.04E-03	1.28E+07	6.40E+04	1.72E-07	3.51E-10	1.67E+05	2.87E-02	
SVOC	Benzo(k)fluoranthene	207-08-9	1.95E-01	4.80E-05	1.16E-05	3.33E-02	3.33E-02	2.05E-03	1.24E+06	6.22E+03	1.86E-06	3.80E-09	1.54E+04	2.87E-02	
SVOC	Chrysene	218-01-9	2.14E-01	5.37E-05	1.48E-03	3.47E-02	3.47E-02	2.05E-03	4.01E+05	2.01E+03	7.38E-04	1.51E-06	3.89E+01	2.87E-02	
SVOC	Dibenz(a,h)anthracene	53-70-3	1.75E-01	4.48E-05	9.57E-08	2.20E-01	2.20E-01	2.05E-03	3.77E+06	1.89E+04	5.08E-09	1.04E-11	5.65E+06	2.87E-02	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	6.91E-01	6.91E-05	1.03E-06	1.39E-01	1.39E-01	2.05E-03	5.03E+05	2.52E+03	4.11E-07	8.41E-10	6.99E+04	2.87E-02	
SVOC	Ethanol	64-17-5	1.06E+00	1.12E-04	1.96E-04	1.72E-01	1.72E-01	2.05E-03	6.81E-01	3.40E-03	5.50E+00	1.13E-02	5.22E-03	2.87E-02	
SVOC	Fluorene	86-73-7	3.14E-01	6.81E-05	1.39E-03	5.08E-02	5.08E-02	2.05E-03	1.38E+04	6.88E+01	2.02E-02	4.12E-05	1.42E+00	2.87E-02	4.12E-05
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.64E-01	4.89E-05	2.03E-05	2.76E-02	2.76E-02	2.04E-03	3.45E+06	1.72E+04	1.18E-06	2.41E-09	2.44E+04	2.87E-02	
SVOC	Naphthalene	91-20-3	5.10E-01	6.48E-05	1.20E-02	8.25E-02	8.25E-02	2.05E-03	2.01E+03	1.00E+01	1.19E+00	2.45E-03	2.40E-02	2.87E-02	2.45E-03
SVOC	Phenanthrene	85-01-8	3.24E-01	6.45E-05	1.41E-03	5.25E-02	5.25E-02	2.05E-03	2.42E+04	1.21E+02	1.16E-02	2.37E-05	2.47E+00	2.87E-02	2.37E-05
SVOC	Pyrene	129-00-0	2.35E-01	6.26E-05	2.00E-04	3.82E-02	3.82E-02	2.05E-03	1.06E+05	5.28E+02	3.79E-04	7.76E-07	7.56E+01	2.87E-02	
SVOC	Tetraethylene Glycol	112-60-7	4.39E-01	6.96E-05	1.62E-11	1.76E+03	1.76E+03	1.68E-01	3.00E-02	1.50E-04	5.01E-07	8.40E-08	5.73E+04	2.87E-02	
PCB	PCBs (total)	1336-36-3	1.75E-01	4.32E-05	6.64E-02	2.83E-02	2.83E-02	2.04E-03	2.45E+06	1.23E+04	5.42E-03	1.11E-05	5.30E+00	2.87E-02	
INORG	Antimony	7440-36-0													
INORG	Arsenic	7440-38-2													
INORG	Chromium III	16065-83-1													
INORG	Chromium VI	18540-29-9													
INORG	Cyanide (total)	57-12-5	1.35E+00	1.53E-04	1.97E-03	2.18E-01	2.18E-01	2.05E-03							
INORG	Lead	7439-92-1													
INORG	Nickel	7440-02-0													
INORG	Vanadium	7440-62-2													

Attachment 2

Table 6:

Normalized Indoor Air Concentration in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes: Subsurface and Building Characteristics			Crack Soil
SCS Soil texture class			Sand
Bulk density	kg/L	ρ_b	1.66
Total porosity	L/L-soil	θ_T	0.375
Water-filled porosity	L/L-soil	θ_w	0.053
Air-filled porosity	L/L-soil	θ_a	0.322
Organic carbon fraction	unitless	f_{OC}	NA
Residual saturation	L/L-soil	θ_r	0.053
Hydraulic conductivity	cm/s	K	7.4E-03
Dynamic viscosity of water	g/cm-s	μ_w	0.01307
Density of water	g/cm ³	ρ_w	1.0
Gravitational acceleration	cm/s ²	g	980.7
Intrinsic permeability	cm ²	k	9.9E-08
Relative saturation	unitless	S_e	0.001
van Genuchten N	unitless	N	3.18
van Genuchten M	unitless	M	0.685
Relative air permeability	unitless	k_{rg}	0.999
Permeability to vapor	cm ²	k_v	9.9E-08
Distance from building foundation to source	m	L_{T-soil}	0.001
Bldg foundation thickness	m	L_{crack}	0.1
Bldg foundation length	m		10.00
Bldg foundation width	m		10.00
Bldg occupied height	m		2.44
Bldg occupied volume	m ³		244.00
Occupied depth below ground	m		0.2
Bldg area for vapor intrusion	m ²	A_B	106.0
Ratio of A_{crack} to A_B		η	4E-04
Area of cracks	m ²	A_{crack}	4.00E-02
Air exchange rate	hour ⁻¹	ach	0.6
Building ventilation rate	m ³ /day	Q_{bldg}	3.51E+03
Pressure difference between outdoors-indoors	kg/m-s ²	ΔP	1.0
Viscosity of air	kg/m-s	μ_a	1.8E-05
Crack length (bldg perimeter)	m	X_{crack}	40
Crack depth below ground	m	Z_{crack}	0.25
Crack radius	m	r_{crack}	1E-03
Soil gas flow rate into bldg	m ³ /day	Q_{soil}	7.20E+00
Averaging period	d	ED	9.13E+03
Contaminant thickness	m	ΔH	5.5

Attachment 2

Table 7:

Unit Risk, Unit HQ, and RBSLs for Soil Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Routine Worker

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{soil} (mg/kg)	C _{air} (mg/m ³)	Cancer			Noncancer		
						URF (mg/m ³) ⁻¹	Risk	RBSL (mg/kg)	RfC (mg/m ³)	HQ	RBSL (mg/kg)
VOC	Benzene	71-43-2	A	1.00E+00	2.87E-02	7.8E-03	1.8E-05	5.5E-01	3.0E-02	2.2E-01	4.6E-01
VOC	Cumene	98-82-8	D	1.00E+00	2.87E-02				4.0E-01	1.6E-02	6.1E+00
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	2.87E-02	6.0E-01	1.4E-03	7.1E-03	9.0E-03	7.3E-01	1.4E-01
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	2.87E-02	2.6E-02	6.1E-05	1.6E-01	7.0E-03	9.4E-01	1.1E-01
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	2.87E-02				1.0E+00	6.5E-03	1.5E+01
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	2.87E-02	2.6E-04	6.1E-07	1.6E+01	3.0E+00	2.2E-03	4.6E+01
VOC	Toluene	108-88-3	ID	1.00E+00	2.87E-02				5.0E+00	1.3E-03	7.6E+01
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	2.87E-02				6.0E-02	1.1E-01	9.2E-01
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	2.87E-02				6.0E-02	1.1E-01	9.2E-01
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	2.87E-02				1.0E-01	6.5E-02	1.5E+00
SVOC	Acenaphthene	83-32-9	ID	1.00E+00	1.95E-04						
SVOC	Anthracene	120-12-7	ID	1.00E+00	1.80E-05						
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		6.0E-02					
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		6.0E-01			2.0E-06		
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		6.0E-02					
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00							
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.00E+00		6.0E-03					
SVOC	Chrysene	218-01-9	B2	1.00E+00		6.0E-04					
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.00E+00		6.0E-01					
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	C	1.00E+00		7.1E+01					
SVOC	Ethanol	64-17-5		1.00E+00					1.9E+01		
SVOC	Fluorene	86-73-7	D	1.00E+00	4.12E-05						
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		6.0E-02					
SVOC	Naphthalene	91-20-3	C	1.00E+00	2.45E-03	3.4E-02	6.8E-06	1.5E+00	3.0E-03	1.9E-01	5.4E-01
SVOC	Phenanthrene	85-01-8	D	1.00E+00	2.37E-05						
SVOC	Pyrene	129-00-0	NC	1.00E+00							
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00							
PCB	PCBs (total)	1336-36-3	B2	1.00E+00		5.7E-01					
INORG	Antimony	7440-36-0	ID	1.00E+00							
INORG	Arsenic	7440-38-2	A	1.00E+00		4.3E+00			1.5E-05		
INORG	Chromium III	16065-83-1	D	1.00E+00					5.0E-03		
INORG	Chromium VI	18540-29-9	A	1.00E+00		1.2E+01			1.0E-04		
INORG	Cyanide (total)	57-12-5		1.00E+00	4.07E-04				8.0E-04	1.2E-01	8.6E-01
INORG	Lead	7439-92-1	B2	1.00E+00							
INORG	Nickel	7440-02-0	A	1.00E+00		2.4E-01			9.0E-05		
INORG	Vanadium	7440-62-2	ID	1.00E+00					1.0E-04		

Note:

Cancer RBSLs are calculated at a target cancer risk of 1E-05.

Noncancer RBSLs are calculated at a target HQ of 0.1.

Attachment 2

Table 8:

Normalized Vapor Flux to Outdoor Air from Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	H (unitless)	D _{eff} ^T (m ² /day)	J (L/m ² -s)	C _{air} (L/m ³)
VOC	Benzene	71-43-2	1.68E-01	6.25E-04	1.33E-06	3.34E-05
VOC	Cumene	98-82-8	3.28E-01	2.57E-04	1.06E-06	2.67E-05
VOC	1,2-Dibromoethane	106-93-4	2.37E-02	2.38E-03	7.16E-07	1.79E-05
VOC	1,2-Dichloroethane	107-06-2	2.92E-02	2.78E-03	1.03E-06	2.57E-05
VOC	Ethyl Benzene	100-41-4	2.20E-01	4.00E-04	1.11E-06	2.79E-05
VOC	Methyl tert-butyl ether	1634-04-4	1.83E-02	3.92E-03	9.10E-07	2.28E-05
VOC	Toluene	108-88-3	1.93E-01	4.97E-04	1.21E-06	3.04E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	1.61E-01	5.12E-04	1.04E-06	2.62E-05
VOC	1,3,5-Trimethylbenzene	108-67-8	1.54E-01	5.74E-04	1.12E-06	2.80E-05
VOC	Xylenes (total)	1330-20-7	2.52E-01	3.95E-04	1.26E-06	3.15E-05
SVOC	Acenaphthene	83-32-9	3.40E-03	8.55E-03	3.68E-07	9.22E-06
SVOC	Anthracene	120-12-7	1.30E-03	1.31E-02	2.15E-07	5.40E-06
SVOC	Benzo(a)anthracene	56-55-3	5.55E-05	6.47E-02	4.55E-08	
SVOC	Benzo(a)pyrene	50-32-8	1.49E-05	9.62E-02	1.82E-08	
SVOC	Benzo(b)fluoranthene	205-99-2	1.66E-03	8.18E-03	1.72E-07	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.10E-05	5.98E-02	8.33E-09	
SVOC	Benzo(k)fluoranthene	207-08-9	1.16E-05	6.13E-02	8.96E-09	
SVOC	Chrysene	218-01-9	1.48E-03	9.60E-03	1.80E-07	
SVOC	Dibenz(a,h)anthracene	53-70-3	9.57E-08	2.65E+00	3.21E-09	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	1.03E-06	5.36E-01	7.01E-09	
SVOC	Ethanol	64-17-5	1.96E-04	8.08E-02	2.01E-07	
SVOC	Fluorene	86-73-7	1.39E-03	1.35E-02	2.37E-07	5.94E-06
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.03E-05	4.34E-02	1.11E-08	
SVOC	Naphthalene	91-20-3	1.20E-02	3.93E-03	5.99E-07	1.50E-05
SVOC	Phenanthrene	85-01-8	1.41E-03	1.33E-02	2.36E-07	5.91E-06
SVOC	Pyrene	129-00-0	2.00E-04	2.53E-02	6.41E-08	
SVOC	Tetraethylene Glycol	112-60-7	1.62E-11	2.39E+04	4.90E-09	
PCB	PCBs (total)	1336-36-3	6.64E-02	6.01E-04	5.05E-07	
INORG	Antimony	7440-36-0				
INORG	Arsenic	7440-38-2				
INORG	Chromium III	16065-83-1				
INORG	Chromium VI	18540-29-9				
INORG	Cyanide (total)	57-12-5	1.97E-03	3.30E-02	8.25E-07	2.07E-05
INORG	Lead	7439-92-1				
INORG	Nickel	7440-02-0				
INORG	Vanadium	7440-62-2				

Parameters

Depth to groundwater	m	DTW	0.91
Dispersion coefficient	(L/m ³) / (L/m ² /s)	C/Q	25.1

Attachment 2

Table 9:

Unit Risk, Unit HQ, and RBSLs for Exposure of Routine Workers to Groundwater-derived Vapors in Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{GW} (mg/L)	C _{air} (mg/m ³)	Cancer			Noncancer		
						URF (mg/m ³) ⁻¹	Risk	RBSL (mg/L)	RfC (mg/m ³)	HQ	RBSL (mg/L)
VOC	Benzene	71-43-2	A	1.00E+00	3.34E-05	7.8E-03	1.5E-08	6.5E+02	3.0E-02	1.8E-04	5.5E+02
VOC	Cumene	98-82-8	D	1.00E+00	2.67E-05				4.0E-01	1.1E-05	9.1E+03
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	1.79E-05	6.0E-01	6.3E-07	1.6E+01	9.0E-03	3.3E-04	3.1E+02
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	2.57E-05	2.6E-02	3.9E-08	2.5E+02	7.0E-03	6.0E-04	1.7E+02
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	2.79E-05				1.0E+00	4.6E-06	2.2E+04
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	2.28E-05	2.6E-04	3.5E-10	2.9E+04	3.0E+00	1.2E-06	8.0E+04
VOC	Toluene	108-88-3	ID	1.00E+00	3.04E-05				5.0E+00	1.0E-06	1.0E+05
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	2.62E-05				6.0E-02	7.2E-05	1.4E+03
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	2.80E-05				6.0E-02	7.7E-05	1.3E+03
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	3.15E-05				1.0E-01	5.2E-05	1.9E+03
SVOC	Acenaphthene	83-32-9	ID	1.00E+00	9.22E-06						
SVOC	Anthracene	120-12-7	ID	1.00E+00	5.40E-06						
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		6.0E-02					
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		6.0E-01			2.0E-06		
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		6.0E-02					
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00							
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.00E+00		6.0E-03					
SVOC	Chrysene	218-01-9	B2	1.00E+00		6.0E-04					
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.00E+00		6.0E-01					
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	C	1.00E+00		7.1E+01					
SVOC	Ethanol	64-17-5		1.00E+00					1.9E+01		
SVOC	Fluorene	86-73-7	D	1.00E+00	5.94E-06						
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		6.0E-02					
SVOC	Naphthalene	91-20-3	C	1.00E+00	1.50E-05	3.4E-02	3.0E-08	3.3E+02	3.0E-03	8.2E-04	1.2E+02
SVOC	Phenanthrene	85-01-8	D	1.00E+00	5.91E-06						
SVOC	Pyrene	129-00-0	NC	1.00E+00							
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00							
PCB	PCBs (total)	1336-36-3	B2	1.00E+00		5.7E-01					
INORG	Antimony	7440-36-0	ID	1.00E+00							
INORG	Arsenic	7440-38-2	A	1.00E+00		4.3E+00			1.5E-05		
INORG	Chromium III	16065-83-1	D	1.00E+00					5.0E-03		
INORG	Chromium VI	18540-29-9	A	1.00E+00		1.2E+01			1.0E-04		
INORG	Cyanide (total)	57-12-5		1.00E+00	2.07E-05				8.0E-04	4.2E-03	2.4E+01
INORG	Lead	7439-92-1	B2	1.00E+00							
INORG	Nickel	7440-02-0	A	1.00E+00		2.4E-01			9.0E-05		
INORG	Vanadium	7440-62-2	ID	1.00E+00					1.0E-04		

Attachment 2

Table 10:

Normalized Indoor Air Concentration in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	D _{air} (m ² /day)	D _{water} (m ² /day)	H (unitless)	D _{crack} (m ² /day)	D _{eff} ^T (m ² /day)	α _{soil}	α _{slab}	α _∞	C _{b, norm} (L-water/m ³)
VOC	Benzene	71-43-2	7.60E-01	8.47E-05	1.68E-01	8.24E-02	4.54E-04	9.96E-03	2.05E-03	2.04E-05	3.44E-03
VOC	Cumene	98-82-8	5.62E-01	6.13E-05	3.28E-01	6.09E-02	1.86E-04	4.11E-03	2.05E-03	8.43E-06	2.76E-03
VOC	1,2-Dibromoethane	106-93-4	3.72E-01	7.29E-05	2.37E-02	4.03E-02	1.76E-03	3.75E-02	2.05E-03	7.68E-05	1.82E-03
VOC	1,2-Dichloroethane	107-06-2	8.99E-01	8.55E-05	2.92E-02	9.74E-02	2.03E-03	4.31E-02	2.05E-03	8.84E-05	2.58E-03
VOC	Ethyl Benzene	100-41-4	6.48E-01	6.74E-05	2.20E-01	7.02E-02	2.91E-04	6.40E-03	2.05E-03	1.31E-05	2.88E-03
VOC	Methyl tert-butyl ether	1634-04-4	7.42E-01	8.73E-05	1.83E-02	8.04E-02	2.88E-03	6.00E-02	2.05E-03	1.23E-04	2.25E-03
VOC	Toluene	108-88-3	7.52E-01	7.43E-05	1.93E-01	8.15E-02	3.61E-04	7.94E-03	2.05E-03	1.63E-05	3.14E-03
VOC	1,2,4-Trimethylbenzene	95-63-6	5.24E-01	6.84E-05	1.61E-01	5.67E-02	3.72E-04	8.18E-03	2.05E-03	1.68E-05	2.70E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	5.20E-01	7.49E-05	1.54E-01	5.64E-02	4.17E-04	9.16E-03	2.05E-03	1.88E-05	2.89E-03
VOC	Xylenes (total)	1330-20-7	6.74E-01	7.56E-05	2.52E-01	7.30E-02	2.87E-04	6.32E-03	2.05E-03	1.30E-05	3.26E-03
SVOC	Acenaphthene	83-32-9	3.64E-01	6.64E-05	3.40E-03	3.95E-02	6.59E-03	1.27E-01	2.05E-03	2.61E-04	8.87E-04
SVOC	Anthracene	120-12-7	2.80E-01	6.69E-05	1.30E-03	3.05E-02	1.07E-02	1.92E-01	2.05E-03	3.93E-04	5.12E-04
SVOC	Benzo(a)anthracene	56-55-3	4.41E-01	7.78E-05	5.55E-05	5.10E-02	7.14E-02	6.13E-01	2.05E-03	1.26E-03	
SVOC	Benzo(a)pyrene	50-32-8	3.72E-01	7.78E-05	1.49E-05	5.23E-02	1.40E-01	7.56E-01	2.05E-03	1.55E-03	
SVOC	Benzo(b)fluoranthene	205-99-2	1.95E-01	4.80E-05	1.66E-03	2.12E-02	6.62E-03	1.28E-01	2.05E-03	2.62E-04	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.88E-01	4.54E-05	1.10E-05	2.99E-02	9.63E-02	6.81E-01	2.05E-03	1.40E-03	
SVOC	Benzo(k)fluoranthene	207-08-9	1.95E-01	4.80E-05	1.16E-05	3.08E-02	9.78E-02	6.84E-01	2.05E-03	1.40E-03	
SVOC	Chrysene	218-01-9	2.14E-01	5.37E-05	1.48E-03	2.33E-02	7.83E-03	1.48E-01	2.05E-03	3.03E-04	
SVOC	Dibenz(a,h)anthracene	53-70-3	1.75E-01	4.48E-05	9.57E-08	1.10E+00	7.36E+00	9.94E-01	2.05E-03	2.04E-03	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	6.91E-01	6.91E-05	1.03E-06	2.30E-01	1.18E+00	9.63E-01	2.05E-03	1.97E-03	
SVOC	Ethanol	64-17-5	1.06E+00	1.12E-04	1.96E-04	1.16E-01	7.21E-02	6.15E-01	2.05E-03	1.26E-03	
SVOC	Fluorene	86-73-7	3.14E-01	6.81E-05	1.39E-03	3.41E-02	1.10E-02	1.95E-01	2.05E-03	4.00E-04	5.56E-04
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.64E-01	4.89E-05	2.03E-05	2.34E-02	6.38E-02	5.86E-01	2.05E-03	1.20E-03	
SVOC	Naphthalene	91-20-3	5.10E-01	6.48E-05	1.20E-02	5.53E-02	2.91E-03	6.05E-02	2.05E-03	1.24E-04	1.49E-03
SVOC	Phenanthrene	85-01-8	3.24E-01	6.45E-05	1.41E-03	3.52E-02	1.07E-02	1.92E-01	2.05E-03	3.93E-04	5.52E-04
SVOC	Pyrene	129-00-0	2.35E-01	6.26E-05	2.00E-04	2.62E-02	2.48E-02	3.55E-01	2.05E-03	7.27E-04	
SVOC	Tetraethylene Glycol	112-60-7	4.39E-01	6.96E-05	1.62E-11	9.95E+03	6.72E+04	1.00E+00	5.32E-01	5.32E-01	
PCB	PCBs (total)	1336-36-3	1.75E-01	4.32E-05	6.64E-02	1.89E-02	4.40E-04	9.65E-03	2.05E-03	1.98E-05	
INORG	Antimony	7440-36-0									
INORG	Arsenic	7440-38-2									
INORG	Chromium III	16065-83-1									
INORG	Chromium VI	18540-29-9									
INORG	Cyanide (total)	57-12-5	1.35E+00	1.53E-04	1.97E-03	1.46E-01	2.55E-02	3.61E-01	2.05E-03	7.40E-04	1.46E-03
INORG	Lead	7439-92-1									
INORG	Nickel	7440-02-0									
INORG	Vanadium	7440-62-2									

Attachment 2

Table 10:

Normalized Indoor Air Concentration in a Default PADEP Nonresidential Building (Slab-On-Grade) Due to Vapor Intrusion from Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

Subsurface and Building Characteristics			Crack Soil
SCS Soil texture class			Sand
Bulk density	kg/L	ρ_b	1.66
Total porosity	L/L-soil	θ_T	0.375
Water-filled porosity	L/L-soil	θ_w	0.090
Air-filled porosity	L/L-soil	θ_a	0.285
Residual saturation	L/L-soil	θ_r	0.053
Hydraulic conductivity	cm/s	K	7.4E-03
Dynamic viscosity of water	g/cm-s	μ_w	0.01307
Density of water	g/cm ³	ρ_w	1.0
Gravitational acceleration	cm/s ²	g	980.7
Intrinsic permeability	cm ²	k	9.9E-08
Relative saturation	unitless	S_e	0.115
van Genuchten N	unitless	N	3.177
van Genuchten M	unitless	M	0.685
Relative air permeability	unitless	k_{rg}	0.887
Permeability to vapor	cm ²	k_v	8.79E-08
Distance from foundation to source	m	L_{T-gw}	0.66
Bldg foundation thickness	m	L_{crack}	0.1
Bldg foundation length	m		10.00
Bldg foundation width	m		10.00
Bldg occupied height	m		2.44
Bldg occupied volume	m ³		244.00
Occupied depth below ground	m		0.2
Bldg area for vapor intrusion	m ²	A_B	106.0
Ratio of A_{crack} to A_B		η	4E-04
Area of cracks	m ²	A_{crack}	4E-02
Air exchange rate	hour ⁻¹	ach	0.60
Building ventilation rate	m ³ /day	Q_{bldg}	3.5E+03
Pressure diff. outdoors-indoors	kg/m-s ²	ΔP	1.0
Viscosity of air	kg/m-s	μ_a	1.8E-05
Crack length (bldg perimeter)	m	X_{crack}	40
Crack depth below ground	m	Z_{crack}	0.25
Crack radius	m	r_{crack}	1E-03
Soil gas flow rate into bldg	m ³ /day	Q_{soil}	7.20

Attachment 2

Table 11:

Unit Risk, Unit HQ, and RBSLs for Groundwater Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Routine Worker

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{gw} (mg/L)	C _{air} (mg/m ³)	Cancer			Noncancer		
						URF (mg/m ³) ⁻¹	Risk	RBSL (mg/L)	RfC (mg/m ³)	HQ	RBSL (mg/L)
VOC	Benzene	71-43-2	A	1.00E+00	3.44E-03	7.8E-03	2.2E-06	4.6E+00	3.0E-02	2.6E-02	3.8E+00
VOC	Cumene	98-82-8	D	1.00E+00	2.76E-03				4.0E-01	1.6E-03	6.3E+01
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	1.82E-03	6.0E-01	8.9E-05	1.1E-01	9.0E-03	4.6E-02	2.2E+00
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	2.58E-03	2.6E-02	5.5E-06	1.8E+00	7.0E-03	8.4E-02	1.2E+00
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	2.88E-03				1.0E+00	6.6E-04	1.5E+02
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	2.25E-03	2.6E-04	4.8E-08	2.1E+02	3.0E+00	1.7E-04	5.8E+02
VOC	Toluene	108-88-3	ID	1.00E+00	3.14E-03				5.0E+00	1.4E-04	7.0E+02
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	2.70E-03				6.0E-02	1.0E-02	9.7E+00
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	2.89E-03				6.0E-02	1.1E-02	9.1E+00
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	3.26E-03				1.0E-01	7.4E-03	1.3E+01
SVOC	Acenaphthene	83-32-9	ID	1.00E+00	8.87E-04						
SVOC	Anthracene	120-12-7	ID	1.00E+00	5.12E-04						
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		6.0E-02					
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		6.0E-01			2.0E-06		
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		6.0E-02					
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00							
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.00E+00		6.0E-03					
SVOC	Chrysene	218-01-9	B2	1.00E+00		6.0E-04					
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.00E+00		6.0E-01					
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	C	1.00E+00		7.1E+01					
SVOC	Ethanol	64-17-5		1.00E+00					1.9E+01		
SVOC	Fluorene	86-73-7	D	1.00E+00	5.56E-04						
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		6.0E-02					
SVOC	Naphthalene	91-20-3	C	1.00E+00	1.49E-03	3.4E-02	4.1E-06	2.4E+00	3.0E-03	1.1E-01	8.8E-01
SVOC	Phenanthrene	85-01-8	D	1.00E+00	5.52E-04						
SVOC	Pyrene	129-00-0	NC	1.00E+00							
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00							
PCB	PCBs (total)	1336-36-3	B2	1.00E+00		5.7E-01					
INORG	Antimony	7440-36-0	ID	1.00E+00							
INORG	Arsenic	7440-38-2	A	1.00E+00		4.3E+00			1.5E-05		
INORG	Chromium III	16065-83-1	D	1.00E+00					5.0E-03		
INORG	Chromium VI	18540-29-9	A	1.00E+00		1.2E+01			1.0E-04		
INORG	Cyanide (total)	57-12-5		1.00E+00	1.46E-03				8.0E-04	4.2E-01	2.4E-01
INORG	Lead	7439-92-1	B2	1.00E+00							

Attachment 2

Table 11:

Unit Risk, Unit HQ, and RBSLs for Groundwater Vapor Intrusion into a Default PADEP Nonresidential Building (Slab-On-Grade)

Routine Worker

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{gw} (mg/L)	C _{air} (mg/m ³)	Cancer			Noncancer		
						URF (mg/m ³) ⁻¹	Risk	RBSL (mg/L)	RfC (mg/m ³)	HQ	RBSL (mg/L)
INORG	Nickel	7440-02-0	A	1.00E+00		2.4E-01			9.0E-05		
INORG	Vanadium	7440-62-2	ID	1.00E+00					1.0E-04		

Notes:

Cancer RBSLs are calculated at a target cancer risk of 1E-05.

Noncancer RBSLs are calculated at a target HQ of 0.1.

Attachment 2

Table 12:

Blood Lead Model for Adult Exposure to Lead in Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Soil Ingestion

Soil Pb concentration		mg-Pb/kg-soil	2,518
Gastrointestinal absorption	AF	unitless	0.12
Ingestion rate	IR	mg-soil/day	50
Conversion factor		kg/mg	1E-06
Exposure frequency	EF	days/year	219
Averaging time	AT	days	365

Baseline blood lead	PbB_{baseline}	ug-Pb/dL	0.6
Biokinetic slope factor	BSF	ug-Pb/dL per ug-Pb/day	0.4
Geometric std deviation	GSD		1.8

Blood lead goal	PbB_{goal}	ug-Pb/dL	10
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Soil Pb to meet PbB_{goal} at specific percentiles	z	Percentile	Soil Pb (mg/kg)
	0.000	50	7,299
	0.674	75	4,774
	1.036	85	3,779
	1.282	90	3,216
	1.645	95	2,518
	2.054	98	1,891
	2.326	99	1,549

Notes:

The model is adapted from the methodology provided in *Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks associated with Adult Exposure to Lead in Soil* (USEPA 2003), including *Update of the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameters* (USEPA 2017).

The shaded value represents the screening level.

Attachment 3

Construction Worker Risk Based Screening Level Calculations

Table 1 – Normalized Average Vapor Flux from Soil to Outdoor Air

Table 2 – Dispersion Factor to Outdoor Air

Table 3 – Concentrations in Outdoor Air from Soil

Table 4a – Unit Risk and Cancer-Based RBSLs for Exposure of Construction Workers to Soil

Table 4b – Unit HQ and Noncancer-Based RBSLs for Exposure of Construction Workers to Soil

Table 5 – Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Table 6 – Dermal Absorbed Dose for Groundwater

Table 7a – Unit Risk and Cancer-Based RBSLs for Exposure of Construction Workers to Groundwater in Excavations

Table 7b – Unit HQ and Noncancer-Based RBSLs for Exposure of Construction Workers to Groundwater in Excavations



Attachment 3

Table 1:

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	D _{air} (m ² /d)	D _{water} (m ² /d)	D _G (m ² /d)	D _L (m ² /d)	D _E (m ² /d)	J _v (kg/m ² -s)
VOC	Benzene	71-43-2	5.82E+01		1.68E-01	7.60E-01	8.47E-05	1.23E-01	3.46E-08	3.51E-02	1.79E-04
VOC	Cumene	98-82-8	7.05E+02		3.28E-01	5.62E-01	6.13E-05	9.10E-02	2.51E-08	4.96E-03	7.98E-05
VOC	1,2-Dibromoethane	106-93-4	2.22E+01		2.37E-02	3.72E-01	7.29E-05	6.02E-02	2.98E-08	5.83E-03	8.65E-05
VOC	1,2-Dichloroethane	107-06-2	1.75E+01		2.92E-02	8.99E-01	8.55E-05	1.46E-01	3.50E-08	2.04E-02	1.50E-04
VOC	Ethyl Benzene	100-41-4	3.67E+02		2.20E-01	6.48E-01	6.74E-05	1.05E-01	2.76E-08	7.27E-03	9.63E-05
VOC	Methyl tert-butyl ether	1634-04-4	1.15E+01		1.83E-02	7.42E-01	8.73E-05	1.20E-01	3.57E-08	1.43E-02	1.31E-04
VOC	Toluene	108-88-3	1.80E+02		1.93E-01	7.52E-01	7.43E-05	1.22E-01	3.04E-08	1.46E-02	1.32E-04
VOC	1,2,4-Trimethylbenzene	95-63-6	8.97E+02		1.61E-01	5.24E-01	6.84E-05	8.48E-02	2.80E-08	1.81E-03	4.83E-05
VOC	1,3,5-Trimethylbenzene	108-67-8	1.76E+03		1.54E-01	5.20E-01	7.49E-05	8.42E-02	3.06E-08	8.81E-04	3.37E-05
VOC	Xylenes (total)	1330-20-7	3.86E+02		2.52E-01	6.74E-01	7.56E-05	1.09E-01	3.09E-08	8.23E-03	1.02E-04
SVOC	Acenaphthene	83-32-9	7.14E+03		3.40E-03	3.64E-01	6.64E-05	5.89E-02	2.72E-08	3.38E-06	2.09E-06
SVOC	Anthracene	120-12-7	2.97E+04		1.30E-03	2.80E-01	6.69E-05	4.53E-02	2.74E-08	2.40E-07	5.56E-07
SVOC	Benzo(a)anthracene	56-55-3	4.01E+05		5.55E-05	4.41E-01	7.78E-05	7.14E-02	3.18E-08	1.20E-09	
SVOC	Benzo(a)pyrene	50-32-8	1.01E+06		1.49E-05	3.72E-01	7.78E-05	6.02E-02	3.18E-08	1.11E-10	
SVOC	Benzo(b)fluoranthene	205-99-2	1.24E+06		1.66E-03	1.95E-01	4.80E-05	3.16E-02	1.97E-08	5.08E-09	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.28E+07		1.10E-05	1.88E-01	4.54E-05	3.04E-02	1.86E-08	3.32E-12	
SVOC	Benzo(k)fluoranthene	207-08-9	1.24E+06		1.16E-05	1.95E-01	4.80E-05	3.16E-02	1.97E-08	3.73E-11	
SVOC	Chrysene	218-01-9	4.01E+05		1.48E-03	2.14E-01	5.37E-05	3.47E-02	2.20E-08	1.54E-08	
SVOC	Dibenz(a,h)anthracene	53-70-3	3.77E+06		9.57E-08	1.75E-01	4.48E-05	2.83E-02	1.83E-08	6.71E-13	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	5.03E+05		1.03E-06	6.91E-01	6.91E-05	1.12E-01	2.83E-08	3.45E-11	
SVOC	Ethanol	64-17-5	6.81E-01		1.96E-04	1.06E+00	1.12E-04	1.72E-01	4.60E-08	5.71E-04	
SVOC	Fluorene	86-73-7	1.38E+04		1.39E-03	3.14E-01	6.81E-05	5.08E-02	2.79E-08	6.17E-07	8.91E-07
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.45E+06		2.03E-05	1.64E-01	4.89E-05	2.66E-02	2.00E-08	1.96E-11	
SVOC	Naphthalene	91-20-3	2.01E+03		1.20E-02	5.10E-01	6.48E-05	8.26E-02	2.65E-08	5.94E-05	8.75E-06
SVOC	Phenanthrene	85-01-8	2.42E+04		1.41E-03	3.24E-01	6.45E-05	5.25E-02	2.64E-08	3.67E-07	6.87E-07
SVOC	Pyrene	129-00-0	1.06E+05		2.00E-04	2.35E-01	6.26E-05	3.81E-02	2.56E-08	8.73E-09	
SVOC	Tetraethylene Glycol	112-60-7	3.00E-02		1.62E-11	4.39E-01	6.96E-05	7.11E-02	2.85E-08	5.30E-07	
PCB	PCBs (total)	1336-36-3	2.45E+06		6.64E-02	1.75E-01	4.32E-05	2.83E-02	1.77E-08	9.22E-08	
INORG	Antimony	7440-36-0		4.50E+01							
INORG	Arsenic	7440-38-2		2.90E+01							
INORG	Chromium III	16065-83-1		1.80E+06							
INORG	Chromium VI	18540-29-9		1.90E+01							
INORG	Cyanide (total)	57-12-5		9.90E+00	1.97E-03	1.35E+00	1.53E-04	2.18E-01	6.26E-08	2.61E-05	5.80E-06
INORG	Lead	7439-92-1		9.00E+02							
INORG	Nickel	7440-02-0		6.50E+01							
INORG	Vanadium	7440-62-2		1.00E+03							

Attachment 3

Table 1:

Normalized Average Vapor Flux from Soil to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

Soil bulk density	kg/L	ρ_b	1.66
Soil porosity	L/L-soil	θ	0.38
Soil water content	L/L-soil	θ_w	0.05
Soil air-filled porosity	L/L-soil	θ_a	0.32
Soil organic carbon fraction	unitless	f_{oc}	0.005
Averaging period (Exposure Duration)	years	T	1
	days	T	365
Temperature	$^{\circ}\text{C}$	Temp	18
Clean soil above source	m	Z_1	
Bottom of source depth	m	Z_2	5.79

Based on the volatilization model developed by Jury et. al. (1983) for finite sources as described in USEPA's (1996) Soil Screening Guidance: Technical Background Document. The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 3

Table 2:

Dispersion Factor to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Parameter	Units	Value
Correlation coefficient city		Philadelphia
Correlation coefficient A		14.0111
Correlation coefficient B		19.6154
Correlation coefficient C		225.3397

Soil source area	acres	70.6
Soil C/Q averaging time		Annual Max
Conversion factor from 1-Hr Max for soil		0.19
C/Q for soil	(kg/m³)/(kg/m²-s)	25.06

Groundwater source area	acres	0.0052
Groundwater averaging time for C/Q		24-Hour Max
Conversion factor from 1-Hr Max for groundwater		0.40
C/Q for Groundwater	(L/m³)/(L/m²-s)	9.63

Note:

C/Q is estimated using the empirical correlation in USEPA's (2002) Supplemental Soil Screening Guidance.

Attachment 3

Table 3:

Concentrations in Outdoor Air from Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Chem	Chemical	CASRN	Vapor		PM ₁₀	
			C _{soil} (mg/kg)	C _{air} (mg/m ³)	C _{soil} (mg/kg)	C _{air} (mg/m ³)
			C/Q (kg/m ³ per kg/m ² -s): 2.5E+01			
VOC	Benzene	71-43-2	1.00E+00	4.49E-03	1.00E+00	5.00E-08
VOC	Cumene	98-82-8	1.00E+00	2.00E-03	1.00E+00	5.00E-08
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	2.17E-03	1.00E+00	5.00E-08
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	3.76E-03	1.00E+00	5.00E-08
VOC	Ethyl Benzene	100-41-4	1.00E+00	2.41E-03	1.00E+00	5.00E-08
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	3.27E-03	1.00E+00	5.00E-08
VOC	Toluene	108-88-3	1.00E+00	3.30E-03	1.00E+00	5.00E-08
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	1.21E-03	1.00E+00	5.00E-08
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	8.44E-04	1.00E+00	5.00E-08
VOC	Xylenes (total)	1330-20-7	1.00E+00	2.56E-03	1.00E+00	5.00E-08
SVOC	Acenaphthene	83-32-9	1.00E+00	5.22E-05	1.00E+00	5.00E-08
SVOC	Anthracene	120-12-7	1.00E+00	1.39E-05	1.00E+00	5.00E-08
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		1.00E+00	5.00E-08
SVOC	Benzo(k)fluoranthene	207-08-9	1.00E+00		1.00E+00	5.00E-08
SVOC	Chrysene	218-01-9	1.00E+00		1.00E+00	5.00E-08
SVOC	Dibenz(a,h)anthracene	53-70-3	1.00E+00		1.00E+00	5.00E-08
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	1.00E+00		1.00E+00	5.00E-08
SVOC	Ethanol	64-17-5	1.00E+00		1.00E+00	5.00E-08
SVOC	Fluorene	86-73-7	1.00E+00	2.23E-05	1.00E+00	5.00E-08
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		1.00E+00	5.00E-08
SVOC	Naphthalene	91-20-3	1.00E+00	2.19E-04	1.00E+00	5.00E-08
SVOC	Phenanthrene	85-01-8	1.00E+00	1.72E-05	1.00E+00	5.00E-08
SVOC	Pyrene	129-00-0	1.00E+00		1.00E+00	5.00E-08
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		1.00E+00	5.00E-08
PCB	PCBs (total)	1336-36-3	1.00E+00		1.00E+00	5.00E-08
INORG	Antimony	7440-36-0	1.00E+00		1.00E+00	5.00E-08
INORG	Arsenic	7440-38-2	1.00E+00		1.00E+00	5.00E-08
INORG	Chromium III	16065-83-1	1.00E+00		1.00E+00	5.00E-08
INORG	Chromium VI	18540-29-9	1.00E+00		1.00E+00	5.00E-08
INORG	Cyanide (total)	57-12-5	1.00E+00	1.45E-04	1.00E+00	5.00E-08
INORG	Lead	7439-92-1	1.00E+00		1.00E+00	5.00E-08
INORG	Nickel	7440-02-0	1.00E+00		1.00E+00	5.00E-08
INORG	Vanadium	7440-62-2	1.00E+00		1.00E+00	5.00E-08

Attachment 3

Table 4a:

Unit Risk and Cancer-Based RBSLs for Exposure of Construction Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	C _{soil} (mg/kg)	Soil Ingestion					Soil Dermal Contact					Soil Vapor Inhalation				Soil Particulate Inhalation				All Routes	
					RBA	LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	Risk	RBSL (mg/kg)	ABS _{derm}	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	Risk	RBSL (mg/kg)	C _{air} (mg/m ³)	URF (m ³ /mg)	Risk	RBSL (mg/kg)	C _{air} (mg/m ³)	URF (mg/m ³) ⁻¹	Risk	RBSL (mg/kg)	Risk	RBSL (mg/kg)
VOC	Benzene	71-43-2	A	1.00E+00		2.45E-08	5.5E-02	1.3E-09	7.4E+03			5.5E-02			4.49E-03	7.8E-03	1.1E-07	8.8E+01	5.00E-08	7.8E-03	1.3E-12	7.9E+06	1.2E-07	8.7E+01
VOC	Cumene	98-82-8	D	1.00E+00		2.45E-08								2.00E-03				5.00E-08						
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00		2.45E-08	2.0E+00	4.9E-08	2.0E+02			2.0E+00		2.17E-03	6.0E-01	4.2E-06	2.4E+00	5.00E-08	6.0E-01	9.8E-11	1.0E+05	4.3E-06	2.3E+00	
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00		2.45E-08	9.1E-02	2.2E-09	4.5E+03			9.1E-02		3.76E-03	2.6E-02	3.2E-07	3.1E+01	5.00E-08	2.6E-02	4.2E-12	2.4E+06	3.2E-07	3.1E+01	
VOC	Ethyl Benzene	100-41-4	D	1.00E+00		2.45E-08								2.41E-03				5.00E-08						
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00		2.45E-08	1.8E-03	4.4E-11	2.3E+05			1.8E-03		3.27E-03	2.6E-04	2.8E-09	3.6E+03	5.00E-08	2.6E-04	4.2E-14	2.4E+08	2.8E-09	3.5E+03	
VOC	Toluene	108-88-3	ID	1.00E+00		2.45E-08								3.30E-03				5.00E-08						
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00		2.45E-08								1.21E-03				5.00E-08						
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00		2.45E-08								8.44E-04				5.00E-08						
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00		2.45E-08								2.56E-03				5.00E-08						
SVOC	Acenaphthene	83-32-9	ID	1.00E+00		2.45E-08				1.30E-01	6.73E-09			5.22E-05				5.00E-08						
SVOC	Anthracene	120-12-7	ID	1.00E+00		2.45E-08				1.30E-01	6.73E-09			1.39E-05				5.00E-08						
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		2.45E-08	1.0E-01	2.4E-09	4.1E+03	1.30E-01	6.73E-09	1.0E-01	6.7E-10	1.5E+04		6.0E-02		5.00E-08	6.0E-02	9.8E-12	1.0E+06	3.1E-09	3.2E+03	
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		2.45E-08	1.0E+00	2.4E-08	4.1E+02	1.30E-01	6.73E-09	1.0E+00	6.7E-09	1.5E+03		6.0E-01		5.00E-08	6.0E-01	9.8E-11	1.0E+05	3.1E-08	3.2E+02	
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		2.45E-08	1.0E-01	2.4E-09	4.1E+03	1.30E-01	6.73E-09	1.0E-01	6.7E-10	1.5E+04		6.0E-02		5.00E-08	6.0E-02	9.8E-12	1.0E+06	3.1E-09	3.2E+03	
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00		2.45E-08				1.30E-01	6.73E-09							5.00E-08						
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.00E+00		2.45E-08	1.0E-02	2.4E-10	4.1E+04	1.30E-01	6.73E-09	1.0E-02	6.7E-11	1.5E+05		6.0E-03		5.00E-08	6.0E-03	9.8E-13	1.0E+07	3.1E-10	3.2E+04	
SVOC	Chrysene	218-01-9	B2	1.00E+00		2.45E-08	1.0E-03	2.4E-11	4.1E+05	1.30E-01	6.73E-09	1.0E-03	6.7E-12	1.5E+06		6.0E-04		5.00E-08	6.0E-04	9.8E-14	1.0E+08	3.1E-11	3.2E+05	
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.00E+00		2.45E-08	1.0E+00	2.4E-08	4.1E+02	1.30E-01	6.73E-09	1.0E+00	6.7E-09	1.5E+03		6.0E-01		5.00E-08	6.0E-01	9.8E-11	1.0E+05	3.1E-08	3.2E+02	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	C	1.00E+00		2.45E-08	2.5E+02	6.1E-06	1.6E+00	1.00E-01	5.18E-09	2.5E+02	1.3E-06	7.7E+00		7.1E+01		5.00E-08	7.1E+01	1.2E-08	8.6E+02	7.4E-06	1.3E+00	
SVOC	Ethanol	64-17-5		1.00E+00		2.45E-08												5.00E-08						
SVOC	Fluorene	86-73-7	D	1.00E+00		2.45E-08				1.30E-01	6.73E-09			2.23E-05				5.00E-08						
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		2.45E-08	1.0E-01	2.4E-09	4.1E+03	1.30E-01	6.73E-09	1.0E-01	6.7E-10	1.5E+04		6.0E-02		5.00E-08	6.0E-02	9.8E-12	1.0E+06	3.1E-09	3.2E+03	
SVOC	Naphthalene	91-20-3	C	1.00E+00		2.45E-08	1.2E-01	2.9E-09	3.4E+03	1.30E-01	6.73E-09	1.2E-01	8.1E-10	1.2E+04	2.19E-04	3.4E-02	2.4E-08	4.1E+02	5.00E-08	3.4E-02	5.5E-12	1.8E+06	2.8E-08	3.6E+02
SVOC	Phenanthrene	85-01-8	D	1.00E+00		2.45E-08				1.30E-01	6.73E-09			1.72E-05				5.00E-08						
SVOC	Pyrene	129-00-0	NC	1.00E+00		2.45E-08				1.30E-01	6.73E-09							5.00E-08						
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00		2.45E-08				1.00E-01	5.18E-09							5.00E-08						
PCB	PCBs (total)	1336-36-3	B2	1.00E+00		2.45E-08	2.0E+00	4.9E-08	2.0E+02	1.40E-01	7.25E-09	2.0E+00	1.4E-08	6.9E+02		5.7E-01		5.00E-08	5.7E-01	9.3E-11	1.1E+05	6.4E-08	1.6E+02	
INORG	Antimony	7440-36-0	ID	1.00E+00		2.45E-08												5.00E-08						
INORG	Arsenic	7440-38-2	A	1.00E+00	0.6	2.45E-08	1.5E+00	2.2E-08	4.5E+02	3.00E-02	1.55E-09	1.5E+00	2.3E-09	4.3E+03		4.3E+00		5.00E-08	4.3E+00	7.0E-10	1.4E+04	2.5E-08	4.0E+02	
INORG	Chromium III	16065-83-1	D	1.00E+00		2.45E-08												5.00E-08						
INORG	Chromium VI	18540-29-9	A	1.00E+00		2.45E-08	5.0E-01	1.2E-08	8.2E+02			2.0E+01				1.2E+01		5.00E-08	1.2E+01	2.0E-09	5.1E+03	1.4E-08	7.0E+02	
INORG	Cyanide (total)	57-12-5		1.00E+00		2.45E-08								1.45E-04				5.00E-08						
INORG	Lead	7439-92-1	B2	1.00E+00		2.45E-08												5.00E-08						
INORG	Nickel	7440-02-0	A	1.00E+00		2.45E-08									2.4E-01			5.00E-08	2.4E-01	3.9E-11	2.6E+05	3.9E-11	2.6E+05	
INORG	Vanadium	7440-62-2	ID	1.00E+00		2.45E-08												5.00E-08						

Notes:

The concentration of particulates in the air is assumed to be no more than the former annual National Ambient Air Quality Standards (NAAQS) for PM₁₀ of 50 ug/m³.

Cancer RBSLs are calculated at a target cancer risk of 1E-05.

Attachment 3

Table 4b:

Unit HQ and Noncancer-Based RBSLs for Exposure of Construction Worker to Soil

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{soil} (mg/kg)	Soil Ingestion					Soil Dermal Contact					Soil Vapor Inhalation				Soil Particulate Inhalation				All Routes			
				RBA	ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	RBSL (mg/kg)	ABS _{derm}	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	RBSL (mg/kg)	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	RBSL (mg/kg)	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	RBSL (mg/kg)	HQ	RBSL (mg/kg)		
VOC	Benzene	71-43-2	1.00E+00		1.71E-06	1.0E-02	1.7E-04	5.8E+02				1.0E-02			4.49E-03	9.0E-02	1.1E-02	8.8E+00	5.00E-08	9.0E-02	1.3E-07	7.9E+05	1.2E-02	8.7E+00	
VOC	Cumene	98-82-8	1.00E+00		1.71E-06	4.0E-01	4.3E-06	2.3E+04				4.0E-01			2.00E-03	4.0E-01	1.1E-03	8.8E+01	5.00E-08	4.0E-01	2.9E-08	3.5E+06	1.1E-03	8.7E+01	
VOC	1,2-Dibromoethane	106-93-4	1.00E+00		1.71E-06	9.0E-03	1.9E-04	5.3E+02				9.0E-03			2.17E-03	9.0E-03	5.5E-02	1.8E+00	5.00E-08	9.0E-03	1.3E-06	7.9E+04	5.5E-02	1.8E+00	
VOC	1,2-Dichloroethane	107-06-2	1.00E+00		1.71E-06	2.0E-02	8.6E-05	1.2E+03				2.0E-02			3.76E-03	7.0E-02	1.2E-02	8.1E+00	5.00E-08	7.0E-02	1.6E-07	6.1E+05	1.2E-02	8.1E+00	
VOC	Ethyl Benzene	100-41-4	1.00E+00		1.71E-06	1.0E-01	1.7E-05	5.8E+03				1.0E-01			2.41E-03	9.0E+00	6.1E-05	1.6E+03	5.00E-08	9.0E+00	1.3E-09	7.9E+07	7.8E-05	1.3E+03	
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00		1.71E-06	3.0E-01	5.7E-06	1.8E+04				3.0E-01			3.27E-03	3.0E+00	2.5E-04	4.0E+02	5.00E-08	3.0E+00	3.8E-09	2.6E+07	2.5E-04	3.9E+02	
VOC	Toluene	108-88-3	1.00E+00		1.71E-06	8.0E-01	2.1E-06	4.7E+04				8.0E-01			3.30E-03	5.0E+00	1.5E-04	6.6E+02	5.00E-08	5.0E+00	2.3E-09	4.4E+07	1.5E-04	6.5E+02	
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00		1.71E-06	4.0E-02	4.3E-05	2.3E+03				4.0E-02			1.21E-03	2.0E-01	1.4E-03	7.2E+01	5.00E-08	2.0E-01	5.7E-08	1.8E+06	1.4E-03	7.0E+01	
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00		1.71E-06	4.0E-02	4.3E-05	2.3E+03				4.0E-02			8.44E-04	2.0E-01	9.6E-04	1.0E+02	5.00E-08	2.0E-01	5.7E-08	1.8E+06	1.0E-03	9.9E+01	
VOC	Xylenes (total)	1330-20-7	1.00E+00		1.71E-06	2.0E-01	8.6E-06	1.2E+04				2.0E-01			2.56E-03	3.0E-01	1.9E-03	5.1E+01	5.00E-08	3.0E-01	3.8E-08	2.6E+06	2.0E-03	5.1E+01	
SVOC	Acenaphthene	83-32-9	1.00E+00		1.71E-06	2.0E-01	8.6E-06	1.2E+04	1.30E-01	4.71E-07	2.0E-01	2.4E-06	4.2E+04	5.22E-05				5.00E-08					1.1E-05	9.2E+03	
SVOC	Anthracene	120-12-7	1.00E+00		1.71E-06	1.0E+00	1.7E-06	5.8E+04	1.30E-01	4.71E-07	1.0E+00	4.7E-07	2.1E+05	1.39E-05					5.00E-08					2.2E-06	4.6E+04
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00		1.71E-06				1.30E-01	4.71E-07									5.00E-08						
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00		1.71E-06	3.0E-04	5.7E-03	1.8E+01	1.30E-01	4.71E-07	3.0E-04	1.6E-03	6.4E+01			2.0E-06		5.00E-08	2.0E-06	5.7E-03	1.8E+01	1.3E-02	7.7E+00		
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00		1.71E-06				1.30E-01	4.71E-07								5.00E-08							
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00		1.71E-06	3.0E-01	5.7E-06	1.8E+04	1.30E-01	4.71E-07	3.0E-01	1.6E-06	6.4E+04					5.00E-08					7.3E-06	1.4E+04	
SVOC	Benzo(k)fluoranthene	207-08-9	1.00E+00		1.71E-06				1.30E-01	4.71E-07								5.00E-08							
SVOC	Chrysene	218-01-9	1.00E+00		1.71E-06				1.30E-01	4.71E-07								5.00E-08							
SVOC	Dibenz(a,h)anthracene	53-70-3	1.00E+00		1.71E-06				1.30E-01	4.71E-07								5.00E-08							
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	1.00E+00		1.71E-06				1.00E-01	3.62E-07								5.00E-08							
SVOC	Ethanol	64-17-5	1.00E+00		1.71E-06	6.2E+01	2.8E-08	3.6E+06				6.2E+01					1.9E+01		5.00E-08	1.9E+01	6.0E-10	1.7E+08	2.8E-08	3.5E+06	
SVOC	Fluorene	86-73-7	1.00E+00		1.71E-06	4.0E-01	4.3E-06	2.3E+04	1.30E-01	4.71E-07	4.0E-01	1.2E-06	8.5E+04	2.23E-05				5.00E-08					5.5E-06	1.8E+04	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00		1.71E-06				1.30E-01	4.71E-07								5.00E-08							
SVOC	Naphthalene	91-20-3	1.00E+00		1.71E-06	2.0E-01	8.6E-06	1.2E+04	1.30E-01	4.71E-07	2.0E-01	2.4E-06	4.2E+04	2.19E-04	3.0E-03	1.7E-02	6.0E+00	5.00E-08	3.0E-03	3.8E-06	2.6E+04	1.7E-02	6.0E+00		
SVOC	Phenanthrene	85-01-8	1.00E+00		1.71E-06	3.0E-01	5.7E-06	1.8E+04	1.30E-01	4.71E-07	3.0E-01	1.6E-06	6.4E+04	1.72E-05				5.00E-08					7.3E-06	1.4E+04	
SVOC	Pyrene	129-00-0	1.00E+00		1.71E-06	3.0E-01	5.7E-06	1.8E+04	1.30E-01	4.71E-07	3.0E-01	1.6E-06	6.4E+04					5.00E-08					7.3E-06	1.4E+04	
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00		1.71E-06	2.0E+00	8.6E-07	1.2E+05	1.00E-01	3.62E-07	2.0E+00	1.8E-07	5.5E+05					5.00E-08					1.0E-06	9.6E+04	
PCB	PCBs (total)	1336-36-3	1.00E+00		1.71E-06	5.0E-05	3.4E-02	2.9E+00	1.40E-01	5.07E-07	5.0E-05	1.0E-02	9.9E+00					5.00E-08					4.4E-02	2.3E+00	
INORG	Antimony	7440-36-0	1.00E+00		1.71E-06	4.0E-04	4.3E-03	2.3E+01			6.0E-05							5.00E-08					4.3E-03	2.3E+01	
INORG	Arsenic	7440-38-2	1.00E+00	0.6	1.71E-06	5.0E-03	2.1E-04	4.9E+02	3.00E-02	1.09E-07	5.0E-03	2.2E-05	4.6E+03			1.5E-05		5.00E-08	1.5E-05	7.6E-04	1.3E+02	9.9E-04	1.0E+02		
INORG	Chromium III	16065-83-1	1.00E+00		1.71E-06	1.5E+00	1.1E-06	8.8E+04			2.0E-02							5.00E-08	5.0E-03	2.3E-06	4.4E+04	3.4E-06	2.9E+04		
INORG	Chromium VI	18540-29-9	1.00E+00		1.71E-06	5.0E-03	3.4E-04	2.9E+02			1.3E-04							5.00E-08	1.0E-03	1.1E-05	8.8E+03	3.5E-04	2.8E+02		
INORG	Cyanide (total)	57-12-5	1.00E+00		1.71E-06	6.0E-03	2.9E-04	3.5E+02			6.0E-03			1.45E-04	3.0E-03	1.1E-02	9.0E+00	5.00E-08	3.0E-03	3.8E-06	2.6E+04	1.1E-02	8.8E+00		
INORG	Lead	7439-92-1	1.00E+00		1.71E-06													5.00E-08							
INORG	Nickel	7440-02-0	1.00E+00		1.71E-06	2.0E-02	8.6E-05	1.2E+03			8.0E-04						2.0E-04		5.00E-08	2.0E-04	5.7E-05	1.8E+03	1.4E-04	7.0E+02	
INORG	Vanadium	7440-62-2	1.00E+00		1.71E-06	1.0E-02	1.7E-04	5.8E+02			2.6E-04						1.0E-04		5.00E-08	1.0E-04	1.1E-04	8.8E+02	2.9E-04	3.5E+02	

Notes:
 The concentration of particulates in the air is assumed to be no more than the former annual National Ambient Air Quality Standards (NAAQS) for PM₁₀ of 50 ug/m³.
 Noncancer RBSLs are calculated at a target HQ of 0.1.

Attachment 3

Table 5:

Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	H (unitless)	MW (g/mol)	k_G (cm/s)	k_L (cm/s)	$1/K_L$ (s/cm)	K_L (cm/s)	J_L (L/m ² -s)
VOC	Benzene	71-43-2	1.7E-01	7.8E+01	4.97E-01	1.25E-03	8.12E+02	1.23E-03	1.23E-02
VOC	Cumene	98-82-8	3.3E-01	1.2E+02	4.31E-01	1.01E-03	9.99E+02	1.00E-03	1.00E-02
VOC	1,2-Dibromoethane	106-93-4	2.4E-02	1.9E+02	3.71E-01	8.06E-04	1.35E+03	7.38E-04	7.38E-03
VOC	1,2-Dichloroethane	107-06-2	2.9E-02	9.9E+01	4.60E-01	1.11E-03	9.75E+02	1.03E-03	1.03E-02
VOC	Ethyl Benzene	100-41-4	2.2E-01	1.1E+02	4.49E-01	1.07E-03	9.43E+02	1.06E-03	1.06E-02
VOC	Methyl tert-butyl ether	1634-04-4	1.8E-02	8.8E+01	4.78E-01	1.18E-03	9.64E+02	1.04E-03	1.04E-02
VOC	Toluene	108-88-3	1.9E-01	9.2E+01	4.71E-01	1.15E-03	8.80E+02	1.14E-03	1.14E-02
VOC	1,2,4-Trimethylbenzene	95-63-6	1.6E-01	1.2E+02	4.31E-01	1.01E-03	1.01E+03	9.93E-04	9.93E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	1.5E-01	1.2E+02	4.31E-01	1.01E-03	1.01E+03	9.93E-04	9.93E-03
VOC	Xylenes (total)	1330-20-7	2.5E-01	1.1E+02	4.49E-01	1.07E-03	9.42E+02	1.06E-03	1.06E-02
SVOC	Acenaphthene	83-32-9	3.4E-03	1.5E+02	3.96E-01	8.90E-04	1.87E+03	5.36E-04	5.36E-03
SVOC	Anthracene	120-12-7	1.3E-03	1.8E+02	3.77E-01	8.28E-04	3.24E+03	3.09E-04	3.09E-03
SVOC	Benzo(a)anthracene	56-55-3	5.6E-05	2.3E+02	3.47E-01	7.31E-04	5.32E+04	1.88E-05	
SVOC	Benzo(a)pyrene	50-32-8	1.5E-05	2.5E+02	3.36E-01	6.96E-04	2.01E+05	4.98E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	1.7E-03	2.5E+02	3.36E-01	6.96E-04	3.23E+03	3.09E-04	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.1E-05	2.8E+02	3.26E-01	6.65E-04	2.81E+05	3.56E-06	
SVOC	Benzo(k)fluoranthene	207-08-9	1.2E-05	2.5E+02	3.36E-01	6.96E-04	2.59E+05	3.86E-06	
SVOC	Chrysene	218-01-9	1.5E-03	2.3E+02	3.47E-01	7.31E-04	3.31E+03	3.02E-04	
SVOC	Dibenz(a,h)anthracene	53-70-3	9.6E-08	2.8E+02	3.25E-01	6.62E-04	3.22E+07	3.11E-08	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	1.0E-06	2.6E+02	3.34E-01	6.90E-04	2.90E+06	3.45E-07	
SVOC	Ethanol	64-17-5	2.0E-04	4.6E+01	5.94E-01	1.63E-03	9.21E+03	1.09E-04	
SVOC	Fluorene	86-73-7	1.4E-03	1.7E+02	3.86E-01	8.57E-04	3.03E+03	3.30E-04	3.30E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.0E-05	2.8E+02	3.26E-01	6.65E-04	1.53E+05	6.54E-06	
SVOC	Naphthalene	91-20-3	1.2E-02	1.3E+02	4.21E-01	9.76E-04	1.22E+03	8.18E-04	8.18E-03
SVOC	Phenanthrene	85-01-8	1.4E-03	1.8E+02	3.77E-01	8.28E-04	3.09E+03	3.23E-04	3.23E-03
SVOC	Pyrene	129-00-0	2.0E-04	2.0E+02	3.62E-01	7.77E-04	1.51E+04	6.62E-05	
SVOC	Tetraethylene Glycol	112-60-7	1.6E-11	1.9E+02	3.67E-01	7.93E-04	1.68E+11	5.95E-12	
PCB	PCBs (total)	1336-36-3	6.6E-02	3.3E+02	3.08E-01	6.10E-04	1.69E+03	5.92E-04	
INORG	Antimony	7440-36-0		1.2E+02	4.29E-01	1.00E-03			
INORG	Arsenic	7440-38-2		7.5E+01	5.04E-01	1.28E-03			
INORG	Chromium III	16065-83-1		5.2E+01	5.70E-01	1.53E-03			
INORG	Chromium VI	18540-29-9		5.2E+01	5.70E-01	1.53E-03			
INORG	Cyanide (total)	57-12-5	2.0E-03	2.6E+01	7.19E-01	2.17E-03	1.17E+03	8.57E-04	8.57E-03
INORG	Lead	7439-92-1		2.1E+02	3.59E-01	7.68E-04			
INORG	Nickel	7440-02-0		5.9E+01	5.47E-01	1.44E-03			
INORG	Vanadium	7440-62-2		5.1E+01	5.74E-01	1.55E-03			

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Table 5:

Normalized Vapor Flux to Outdoor Air from Exposed Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Molecular Weight of Oxygen	g/mol	MW_{O2}	32
Molecular Weight of Water	g/mol	MW_{H2O}	18
Temperature	K	Temp	291
Liquid-phase Mass Transfer Coefficient for Oxygen	cm/s	k_{L,O2}	0.002
Gas-Phase Mass Transfer Coefficient for Water Vapor at 25 °C	cm/s	K_{G,H2O}	0.833
	(L/m ³) /		
Dispersion coefficient	(L/m ² /s)	C/Q	9.6

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Table 6:

Dermal Absorbed Dose for Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	MW (g/mole)	FA (unitless)	K _p (cm/hr)	B (unitless)	t (hr)	c	b	ts (hr)	DA (L/cm ² -event)
VOC	Benzene	71-43-2	7.8E+01	1.0E+00	1.5E-02	5.0E-02	2.9E-01	3.7E-01	3.3E-01	6.9E-01	3.70E-05
VOC	Cumene	98-82-8	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	1,2-Dibromoethane	106-93-4	1.9E+02	1.0E+00	1.6E-03	8.4E-03	1.2E+00	3.4E-01	3.1E-01	2.8E+00	6.81E-06
VOC	1,2-Dichloroethane	107-06-2	9.9E+01	1.0E+00	4.1E-03	1.6E-02	3.8E-01	3.4E-01	3.1E-01	9.0E-01	1.13E-05
VOC	Ethyl Benzene	100-41-4	1.1E+02	1.0E+00	4.8E-02	1.9E-01	4.1E-01	4.7E-01	4.3E-01	9.9E-01	1.27E-04
VOC	Methyl tert-butyl ether	1634-04-4	8.8E+01	1.0E+00	3.3E-03	1.2E-02	3.3E-01	3.4E-01	3.1E-01	7.9E-01	8.84E-06
VOC	Toluene	108-88-3	9.2E+01	1.0E+00	3.2E-02	1.2E-01	3.5E-01	4.2E-01	3.8E-01	8.3E-01	8.08E-05
VOC	1,2,4-Trimethylbenzene	95-63-6	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	1,3,5-Trimethylbenzene	108-67-8	1.2E+02	1.0E+00			5.0E-01	3.3E-01	3.0E-01	1.2E+00	
VOC	Xylenes (total)	1330-20-7	1.1E+02	1.0E+00	5.0E-02	2.0E-01	4.1E-01	4.8E-01	4.4E-01	9.9E-01	1.32E-04
SVOC	Acenaphthene	83-32-9	1.5E+02	1.0E+00			7.7E-01	3.3E-01	3.0E-01	1.8E+00	
SVOC	Anthracene	120-12-7	1.8E+02	1.0E+00			1.0E+00	3.3E-01	3.0E-01	2.5E+00	
SVOC	Benzo(a)anthracene	56-55-3	2.3E+02	9.0E-01			2.0E+00	3.3E-01	3.0E-01	4.8E+00	
SVOC	Benzo(a)pyrene	50-32-8	2.5E+02	8.0E-01			2.7E+00	3.3E-01	3.0E-01	6.5E+00	
SVOC	Benzo(b)fluoranthene	205-99-2	2.5E+02	8.0E-01			2.7E+00	3.3E-01	3.0E-01	6.5E+00	
SVOC	Benzo(g,h,i)perylene	191-24-2	2.8E+02	7.0E-01			3.7E+00	3.3E-01	3.0E-01	8.9E+00	
SVOC	Benzo(k)fluoranthene	207-08-9	2.5E+02	8.0E-01			2.7E+00	3.3E-01	3.0E-01	6.5E+00	
SVOC	Chrysene	218-01-9	2.3E+02	9.0E-01			2.0E+00	3.3E-01	3.0E-01	4.8E+00	
SVOC	Dibenz(a,h)anthracene	53-70-3	2.8E+02	7.0E-01			3.8E+00	3.3E-01	3.0E-01	9.1E+00	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	2.6E+02	1.0E+00			2.9E+00	3.3E-01	3.0E-01	6.9E+00	
SVOC	Ethanol	64-17-5	4.6E+01	1.0E+00	5.5E-04	1.4E-03	1.9E-01	3.3E-01	3.0E-01	4.6E-01	1.30E-06
SVOC	Fluorene	86-73-7	1.7E+02	1.0E+00			9.0E-01	3.3E-01	3.0E-01	2.2E+00	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.8E+02	7.0E-01			3.7E+00	3.3E-01	3.0E-01	8.9E+00	
SVOC	Naphthalene	91-20-3	1.3E+02	1.0E+00			5.5E-01	3.3E-01	3.0E-01	1.3E+00	
SVOC	Phenanthrene	85-01-8	1.8E+02	1.0E+00			1.0E+00	3.3E-01	3.0E-01	2.5E+00	
SVOC	Pyrene	129-00-0	2.0E+02	1.0E+00			1.4E+00	3.3E-01	3.0E-01	3.4E+00	
SVOC	Tetraethylene Glycol	112-60-7	1.9E+02	1.0E+00			1.3E+00	3.3E-01	3.0E-01	3.1E+00	
PCB	PCBs (total)	1336-36-3	3.3E+02	7.0E-01			7.2E+00	3.3E-01	3.0E-01	1.7E+01	
INORG	Antimony	7440-36-0	1.2E+02		1.0E-03		5.1E-01	3.3E-01	3.0E-01	1.2E+00	2.00E-06
INORG	Arsenic	7440-38-2	7.5E+01		1.0E-03		2.8E-01	3.3E-01	3.0E-01	6.6E-01	2.00E-06
INORG	Chromium III	16065-83-1	5.2E+01		1.0E-03		2.1E-01	3.3E-01	3.0E-01	4.9E-01	2.00E-06
INORG	Chromium VI	18540-29-9	5.2E+01		2.0E-03		2.1E-01	3.3E-01	3.0E-01	4.9E-01	4.00E-06
INORG	Cyanide (total)	57-12-5	2.6E+01		1.0E-03		1.5E-01	3.3E-01	3.0E-01	3.5E-01	2.00E-06
INORG	Lead	7439-92-1	2.1E+02		1.0E-04		1.5E+00	3.3E-01	3.0E-01	3.7E+00	2.00E-07
INORG	Nickel	7440-02-0	5.9E+01		2.0E-04		2.2E-01	3.3E-01	3.0E-01	5.4E-01	4.00E-07
INORG	Vanadium	7440-62-2	5.1E+01		1.0E-03		2.0E-01	3.3E-01	3.0E-01	4.9E-01	2.00E-06

Notes:
 Event Time hours t 2
 K_p capped at 1 cm/hr (USEPA 1992).
 The dermal absorbed dose for inorganic chemicals is estimated using a steady-state approach (USEPA 2004, Equation 3.4) and for organic chemicals is estimated using a nonsteady-state approach (USEPA 2004, Equations 3.2 and 3.3).

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Table 7a:

Unit Risk and Cancer-Based RBSLs for Exposure of Construction Workers to Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	C _{gw} (mg/l)	Incidental Ingestion				Dermal Contact					Vapor Inhalation				All Routes	
					LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	Risk	RBSL (mg/L)	DA (L/cm ² -event)	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	Risk	RBSL (mg/L)	C _{air} (mg/m ³)	URF (mg/m ³) ⁻¹	Risk	RBSL (mg/L)	Risk	RBSL (mg/L)
VOC	Benzene	71-43-2	A	1.00E+00	7.34E-08	5.5E-02	4.0E-09	2.5E+03	3.70E-05	9.57E-07	5.5E-02	5.3E-08	1.9E+02	1.19E-01	7.8E-03	1.8E-07	5.5E+01	2.4E-07	4.2E+01
VOC	Cumene	98-82-8	D	1.00E+00	7.34E-08									9.64E-02					
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	7.34E-08	2.0E+00	1.5E-07	6.8E+01	6.81E-06	1.76E-07	2.0E+00	3.5E-07	2.8E+01	7.11E-02	6.0E-01	8.4E-06	1.2E+00	8.9E-06	1.1E+00
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	7.34E-08	9.1E-02	6.7E-09	1.5E+03	1.13E-05	2.92E-07	9.1E-02	2.7E-08	3.8E+02	9.88E-02	2.6E-02	5.0E-07	2.0E+01	5.4E-07	1.9E+01
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	7.34E-08				1.27E-04	3.28E-06				1.02E-01					
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	7.34E-08	1.8E-03	1.3E-10	7.6E+04	8.84E-06	2.29E-07	1.8E-03	4.1E-10	2.4E+04	9.99E-02	2.6E-04	5.1E-09	2.0E+03	5.6E-09	1.8E+03
VOC	Toluene	108-88-3	ID	1.00E+00	7.34E-08				8.08E-05	2.09E-06				1.09E-01					
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	7.34E-08									9.57E-02					
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	7.34E-08									9.56E-02					
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	7.34E-08				1.32E-04	3.41E-06				1.02E-01					
SVOC	Acenaphthene	83-32-9	ID	1.00E+00	7.34E-08									5.16E-02					
SVOC	Anthracene	120-12-7	ID	1.00E+00	7.34E-08									2.97E-02					
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00	7.34E-08	1.0E-01	7.3E-09	1.4E+03			1.0E-01				6.0E-02			7.3E-09	1.4E+03
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00	7.34E-08	1.0E+00	7.3E-08	1.4E+02			1.0E+00				6.0E-01			7.3E-08	1.4E+02
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00	7.34E-08	1.0E-01	7.3E-09	1.4E+03			1.0E-01				6.0E-02			7.3E-09	1.4E+03
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00	7.34E-08														
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.00E+00	7.34E-08	1.0E-02	7.3E-10	1.4E+04			1.0E-02				6.0E-03			7.3E-10	1.4E+04
SVOC	Chrysene	218-01-9	B2	1.00E+00	7.34E-08	1.0E-03	7.3E-11	1.4E+05			1.0E-03				6.0E-04			7.3E-11	1.4E+05
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.00E+00	7.34E-08	1.0E+00	7.3E-08	1.4E+02			1.0E+00				6.0E-01			7.3E-08	1.4E+02
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	C	1.00E+00	7.34E-08	2.5E+02	1.8E-05	5.5E-01			2.5E+02				7.1E+01			1.8E-05	5.5E-01
SVOC	Ethanol	64-17-5		1.00E+00	7.34E-08				1.30E-06	3.36E-08									
SVOC	Fluorene	86-73-7	D	1.00E+00	7.34E-08									3.18E-02					
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00	7.34E-08	1.0E-01	7.3E-09	1.4E+03			1.0E-01				6.0E-02			7.3E-09	1.4E+03
SVOC	Naphthalene	91-20-3	C	1.00E+00	7.34E-08	1.2E-01	8.8E-09	1.1E+03			1.2E-01			7.88E-02	3.4E-02	5.2E-07	1.9E+01	5.3E-07	1.9E+01
SVOC	Phenanthrene	85-01-8	D	1.00E+00	7.34E-08									3.11E-02					
SVOC	Pyrene	129-00-0	NC	1.00E+00	7.34E-08														
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00	7.34E-08														
PCB	PCBs (total)	1336-36-3	B2	1.00E+00	7.34E-08	2.0E+00	1.5E-07	6.8E+01			2.0E+00				5.7E-01			1.5E-07	6.8E+01
INORG	Antimony	7440-36-0	ID	1.00E+00	7.34E-08				2.00E-06	5.18E-08									
INORG	Arsenic	7440-38-2	A	1.00E+00	7.34E-08	1.5E+00	1.1E-07	9.1E+01	2.00E-06	5.18E-08	1.5E+00	7.8E-08	1.3E+02		4.3E+00			1.9E-07	5.3E+01
INORG	Chromium III	16065-83-1	D	1.00E+00	7.34E-08				2.00E-06	5.18E-08									
INORG	Chromium VI	18540-29-9	A	1.00E+00	7.34E-08	5.0E-01	3.7E-08	2.7E+02	4.00E-06	1.04E-07	2.0E+01	2.1E-06	4.8E+00		1.2E+01			2.1E-06	4.7E+00
INORG	Cyanide (total)	57-12-5		1.00E+00	7.34E-08				2.00E-06	5.18E-08				8.26E-02					
INORG	Lead	7439-92-1	B2	1.00E+00	7.34E-08				2.00E-07	5.18E-09									
INORG	Nickel	7440-02-0	A	1.00E+00	7.34E-08				4.00E-07	1.04E-08					2.4E-01				
INORG	Vanadium	7440-62-2	ID	1.00E+00	7.34E-08				2.00E-06	5.18E-08									

Notes:

Cancer RBSLs are calculated at a target cancer risk of 1E-05.

Attachment 3

Table 7b:

Unit HQ and Noncancer-Based RBSLs for Exposure of Construction Workers to Groundwater in Excavations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{gw} (mg/L)	Incidental Ingestion				Dermal Contact					Vapor Inhalation				All Routes	
				ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	RBSL (mg/L)	DA (L/cm ² -event)	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	RBSL (mg/L)	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	RBSL (mg/L)	HQ	RBSL (mg/L)
VOC	Benzene	71-43-2	1.00E+00	5.14E-06	1.0E-02	5.1E-04	1.9E+02	3.70E-05	6.70E-05	1.0E-02	6.7E-03	1.5E+01	1.19E-01	9.0E-02	1.8E-02	5.5E+00	2.5E-02	4.0E+00
VOC	Cumene	98-82-8	1.00E+00	5.14E-06	4.0E-01	1.3E-05	7.8E+03			4.0E-01			9.64E-02	4.0E-01	3.3E-03	3.0E+01	3.3E-03	3.0E+01
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	5.14E-06	9.0E-03	5.7E-04	1.8E+02	6.81E-06	1.23E-05	9.0E-03	1.4E-03	7.3E+01	7.11E-02	9.0E-03	1.1E-01	9.2E-01	1.1E-01	9.1E-01
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	5.14E-06	2.0E-02	2.6E-04	3.9E+02	1.13E-05	2.05E-05	2.0E-02	1.0E-03	9.8E+01	9.88E-02	7.0E-02	1.9E-02	5.2E+00	2.1E-02	4.9E+00
VOC	Ethyl Benzene	100-41-4	1.00E+00	5.14E-06	1.0E-01	5.1E-05	1.9E+03	1.27E-04	2.30E-04	1.0E-01	2.3E-03	4.4E+01	1.02E-01	9.0E+00	1.6E-04	6.4E+02	2.5E-03	4.0E+01
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	5.14E-06	3.0E-01	1.7E-05	5.8E+03	8.84E-06	1.60E-05	3.0E-01	5.3E-05	1.9E+03	9.99E-02	3.0E+00	4.6E-04	2.2E+02	5.3E-04	1.9E+02
VOC	Toluene	108-88-3	1.00E+00	5.14E-06	8.0E-01	6.4E-06	1.6E+04	8.08E-05	1.46E-04	8.0E-01	1.8E-04	5.5E+02	1.09E-01	5.0E+00	3.0E-04	3.3E+02	4.9E-04	2.0E+02
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	5.14E-06	4.0E-02	1.3E-04	7.8E+02			4.0E-02			9.57E-02	2.0E-01	6.6E-03	1.5E+01	6.7E-03	1.5E+01
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	5.14E-06	4.0E-02	1.3E-04	7.8E+02			4.0E-02			9.56E-02	2.0E-01	6.5E-03	1.5E+01	6.7E-03	1.5E+01
VOC	Xylenes (total)	1330-20-7	1.00E+00	5.14E-06	2.0E-01	2.6E-05	3.9E+03	1.32E-04	2.39E-04	2.0E-01	1.2E-03	8.4E+01	1.02E-01	3.0E-01	4.7E-03	2.1E+01	5.9E-03	1.7E+01
SVOC	Acenaphthene	83-32-9	1.00E+00	5.14E-06	2.0E-01	2.6E-05	3.9E+03			2.0E-01			5.16E-02				2.6E-05	3.9E+03
SVOC	Anthracene	120-12-7	1.00E+00	5.14E-06	1.0E+00	5.1E-06	1.9E+04			1.0E+00			2.97E-02				5.1E-06	1.9E+04
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00	5.14E-06														
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00	5.14E-06	3.0E-04	1.7E-02	5.8E+00			3.0E-04				2.0E-06			1.7E-02	5.8E+00
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00	5.14E-06														
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00	5.14E-06	3.0E-01	1.7E-05	5.8E+03			3.0E-01							1.7E-05	5.8E+03
SVOC	Benzo(k)fluoranthene	207-08-9	1.00E+00	5.14E-06														
SVOC	Chrysene	218-01-9	1.00E+00	5.14E-06														
SVOC	Dibenz(a,h)anthracene	53-70-3	1.00E+00	5.14E-06														
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	1.00E+00	5.14E-06														
SVOC	Ethanol	64-17-5	1.00E+00	5.14E-06	6.2E+01	8.3E-08	1.2E+06	1.30E-06	2.35E-06	6.2E+01	3.8E-08	2.6E+06		1.9E+01			1.2E-07	8.3E+05
SVOC	Fluorene	86-73-7	1.00E+00	5.14E-06	4.0E-01	1.3E-05	7.8E+03			4.0E-01			3.18E-02				1.3E-05	7.8E+03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00	5.14E-06														
SVOC	Naphthalene	91-20-3	1.00E+00	5.14E-06	2.0E-01	2.6E-05	3.9E+03			2.0E-01			7.88E-02	3.0E-03	3.6E-01	2.8E-01	3.6E-01	2.8E-01
SVOC	Phenanthrene	85-01-8	1.00E+00	5.14E-06	3.0E-01	1.7E-05	5.8E+03			3.0E-01			3.11E-02				1.7E-05	5.8E+03
SVOC	Pyrene	129-00-0	1.00E+00	5.14E-06	3.0E-01	1.7E-05	5.8E+03			3.0E-01							1.7E-05	5.8E+03
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00	5.14E-06	2.0E+00	2.6E-06	3.9E+04			2.0E+00							2.6E-06	3.9E+04
PCB	PCBs (total)	1336-36-3	1.00E+00	5.14E-06	5.0E-05	1.0E-01	9.7E-01			5.0E-05							1.0E-01	9.7E-01
INORG	Antimony	7440-36-0	1.00E+00	5.14E-06	4.0E-04	1.3E-02	7.8E+00	2.00E-06	3.62E-06	6.0E-05	6.0E-02	1.7E+00					7.3E-02	1.4E+00
INORG	Arsenic	7440-38-2	1.00E+00	5.14E-06	5.0E-03	1.0E-03	9.7E+01	2.00E-06	3.62E-06	5.0E-03	7.2E-04	1.4E+02		1.5E-05			1.8E-03	5.7E+01
INORG	Chromium III	16065-83-1	1.00E+00	5.14E-06	1.5E+00	3.4E-06	2.9E+04	2.00E-06	3.62E-06	2.0E-02	1.9E-04	5.4E+02		5.0E-03			1.9E-04	5.3E+02
INORG	Chromium VI	18540-29-9	1.00E+00	5.14E-06	5.0E-03	1.0E-03	9.7E+01	4.00E-06	7.25E-06	1.3E-04	5.8E-02	1.7E+00		1.0E-03			5.9E-02	1.7E+00
INORG	Cyanide (total)	57-12-5	1.00E+00	5.14E-06	6.0E-03	8.6E-04	1.2E+02	2.00E-06	3.62E-06	6.0E-03	6.0E-04	1.7E+02	8.26E-02	3.0E-03	3.8E-01	2.7E-01	3.8E-01	2.6E-01
INORG	Lead	7439-92-1	1.00E+00	5.14E-06				2.00E-07	3.62E-07									
INORG	Nickel	7440-02-0	1.00E+00	5.14E-06	2.0E-02	2.6E-04	3.9E+02	4.00E-07	7.25E-07	8.0E-04	9.1E-04	1.1E+02		2.0E-04			1.2E-03	8.6E+01
INORG	Vanadium	7440-62-2	1.00E+00	5.14E-06	1.0E-02	5.1E-04	1.9E+02	2.00E-06	3.62E-06	2.6E-04	1.4E-02	7.2E+00		1.0E-04			1.4E-02	6.9E+00

Notes:

Noncancer RBSLs are calculated at a target HQ of 0.1.

Attachment 4

Soil Migration to Groundwater Screening Level Calculations

Table 1 – Groundwater Protection Concentrations

Table 2 – Soil Migration to Groundwater Criteria



Attachment 4

Table 1

Groundwater Protection Concentrations

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	Groundwater Protection Concentration (mg/L)	GWP Basis
VOC	Benzene	71-43-2	A	2.5E-01	Min
VOC	Cumene	98-82-8	D	2.6E+00	Min
VOC	1,2-Dibromoethane	106-93-4	LC	7.9E-03	Min
VOC	1,2-Dichloroethane	107-06-2	B2	8.2E-02	Min
VOC	Ethyl Benzene	100-41-4	D	2.0E+00	Min
VOC	Methyl tert-butyl ether	1634-04-4	C	1.5E+01	Min
VOC	Toluene	108-88-3	ID	2.5E+01	Min
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	6.3E-01	Min
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	5.9E-01	Min
VOC	Xylenes (total)	1330-20-7	ID	8.6E-01	Min
SVOC	Acenaphthene	83-32-9	ID	9.0E+00	Min
SVOC	Anthracene	120-12-7	ID	4.0E+01	Min
SVOC	Benzo(a)anthracene	56-55-3	B2	1.3E-02	Min
SVOC	Benzo(a)pyrene	50-32-8	HC	1.3E-03	Min
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.3E-02	Min
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.2E-02	Min
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.3E-01	Min
SVOC	Chrysene	218-01-9	B2	1.3E+00	Min
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.3E-03	Min
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	C	3.9E-05	Min
SVOC	Ethanol	64-17-5		1.0E+04	Min
SVOC	Fluorene	86-73-7	D	7.0E+00	Min
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.3E-02	Min
SVOC	Naphthalene	91-20-3	C	6.7E-02	Min
SVOC	Phenanthrene	85-01-8	D	1.0E+00	Min
SVOC	Pyrene	129-00-0	NC	3.0E+00	Min
SVOC	Tetraethylene Glycol	112-60-7		2.9E+02	Min
PCB	PCBs (total)	1336-36-3	B2	6.4E-04	Min
INORG	Antimony	7440-36-0	ID	2.2E-02	Min
INORG	Arsenic	7440-38-2	A	2.1E-02	Min
INORG	Chromium III	16065-83-1	D	1.1E+01	Min
INORG	Chromium VI	18540-29-9	A	3.9E-03	Min
INORG	Cyanide (total)	57-12-5		2.5E-02	Min
INORG	Lead	7439-92-1	B2	2.5E+00	Min
INORG	Nickel	7440-02-0	A	1.3E+00	Min
INORG	Vanadium	7440-62-2	ID	1.4E-01	Min

Notes:

The target groundwater protection concentration is based on the minimum of the groundwater RBSLs.

Attachment 4

Table 2

Soil Migration to Groundwater Criteria

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Target Concentration in Groundwater (mg/L)		Solubility (mg/L)	K _{oc} (L/kg)	K _d (L/kg)	H (unitless)	C _{soil-MtGW-Eq} (mg/kg)	C _{soil-MtGW-Lt} (mg/kg)	Soil MtGW Screening Level (mg/kg)	
				Min								
VOC	Benzene	71-43-2	2.5E-01	Min	1.8E+03	5.8E+01		1.7E-01	1.8E+00	9.8E+01	9.8E+01	LT
VOC	Cumene	98-82-8	2.6E+00	Min	6.1E+01	7.1E+02		3.3E-01	1.9E+02	1.0E+03	1.0E+03	LT
VOC	1,2-Dibromoethane	106-93-4	7.9E-03	Min	3.9E+03	2.2E+01		2.4E-02	2.3E-02	3.2E+00	3.2E+00	LT
VOC	1,2-Dichloroethane	107-06-2	8.2E-02	Min	8.5E+03	1.7E+01		2.9E-02	2.1E-01	3.3E+01	3.3E+01	LT
VOC	Ethyl Benzene	100-41-4	2.0E+00	Min	1.7E+02	3.7E+02		2.2E-01	7.8E+01	8.2E+02	8.2E+02	LT
VOC	Methyl tert-butyl ether	1634-04-4	1.5E+01	Min	5.1E+04	1.1E+01		1.8E-02	2.7E+01	5.9E+03	5.9E+03	LT
VOC	Toluene	108-88-3	2.5E+01	Min	5.3E+02	1.8E+02		1.9E-01	4.8E+02	9.8E+03	9.8E+03	LT
VOC	1,2,4-Trimethylbenzene	95-63-6	6.3E-01	Min	5.7E+01	9.0E+02		1.6E-01	5.7E+01	2.5E+02	2.5E+02	LT
VOC	1,3,5-Trimethylbenzene	108-67-8	5.9E-01	Min	4.8E+01	1.8E+03		1.5E-01	1.0E+02	2.4E+02	2.4E+02	LT
VOC	Xylenes (total)	1330-20-7	8.6E-01	Min	1.7E+02	3.9E+02		2.5E-01	3.4E+01	3.4E+02	3.4E+02	LT
SVOC	Acenaphthene	83-32-9	9.0E+00	Min	4.2E+00	7.1E+03		3.4E-03	6.4E+03	3.6E+03		NA
SVOC	Anthracene	120-12-7	4.0E+01	Min	4.3E-02	3.0E+04		1.3E-03	1.2E+05	1.6E+04		NA
SVOC	Benzo(a)anthracene	56-55-3	1.3E-02	Min	9.4E-03	4.0E+05		5.6E-05	5.2E+02	5.2E+00		NA
SVOC	Benzo(a)pyrene	50-32-8	1.3E-03	Min	1.6E-03	1.0E+06		1.5E-05	1.3E+02	5.2E-01		NA
SVOC	Benzo(b)fluoranthene	205-99-2	1.3E-02	Min	1.5E-03	1.2E+06		1.7E-03	1.6E+03	5.2E+00		NA
SVOC	Benzo(g,h,i)perylene	191-24-2	1.2E-02	Min	2.6E-04	1.3E+07		1.1E-05	1.5E+04	4.8E+00		NA
SVOC	Benzo(k)fluoranthene	207-08-9	1.3E-01	Min	8.0E-04	1.2E+06		1.2E-05	1.6E+04	5.2E+01		NA
SVOC	Chrysene	218-01-9	1.3E+00	Min	1.6E-03	4.0E+05		1.5E-03	5.2E+04	5.2E+02		NA
SVOC	Dibenz(a,h)anthracene	53-70-3	1.3E-03	Min	2.5E-03	3.8E+06		9.6E-08	4.9E+02	5.2E-01		NA
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	3.9E-05	Min	2.5E-02	5.0E+05		1.0E-06	2.0E+00	1.6E-02	2.0E+00	EQ
SVOC	Ethanol	64-17-5	1.0E+04	Min		6.8E-01		2.0E-04	7.5E+03	4.2E+06	4.2E+06	LT
SVOC	Fluorene	86-73-7	7.0E+00	Min	2.0E+00	1.4E+04		1.4E-03	9.6E+03	2.8E+03		NA
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.3E-02	Min	2.2E-05	3.4E+06		2.0E-05	4.5E+03	5.2E+00		NA
SVOC	Naphthalene	91-20-3	6.7E-02	Min	3.1E+01	2.0E+03		1.2E-02	1.4E+01	2.7E+01	2.7E+01	LT
SVOC	Phenanthrene	85-01-8	1.0E+00	Min	1.2E+00	2.4E+04		1.4E-03	2.4E+03	4.0E+02		NA
SVOC	Pyrene	129-00-0	3.0E+00	Min	1.4E-01	1.1E+05		2.0E-04	3.2E+04	1.2E+03		NA
SVOC	Tetraethylene Glycol	112-60-7	2.9E+02	Min	1.0E+06	3.0E-02		1.6E-11	1.9E+02	1.2E+05	1.2E+05	LT
PCB	PCBs (total)	1336-36-3	6.4E-04	Min	1.2E-02	2.5E+06		6.6E-02	1.6E+02	2.6E-01		NA
INORG	Antimony	7440-36-0	2.2E-02	Min			4.5E+01		2.0E+01	8.9E+00	2.0E+01	EQ
INORG	Arsenic	7440-38-2	2.1E-02	Min			2.9E+01		1.2E+01	8.4E+00	1.2E+01	EQ
INORG	Chromium III	16065-83-1	1.1E+01	Min			1.8E+06		4.0E+08	4.5E+03	4.0E+08	EQ
INORG	Chromium VI	18540-29-9	3.9E-03	Min			1.9E+01		1.5E+00	1.5E+00	1.5E+00	LT
INORG	Cyanide (total)	57-12-5	2.5E-02	Min	9.5E+04		9.9E+00	2.0E-03	4.9E+00	9.9E+00	9.9E+00	LT
INORG	Lead	7439-92-1	2.5E+00	Min			9.0E+02		4.5E+04	1.0E+03	4.5E+04	EQ
INORG	Nickel	7440-02-0	1.3E+00	Min			6.5E+01		1.7E+03	5.3E+02	1.7E+03	EQ
INORG	Vanadium	7440-62-2	1.4E-01	Min			1.0E+03		2.8E+03	5.7E+01	2.8E+03	EQ

Attachment 4

Table 2

Soil Migration to Groundwater Criteria

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

f_{oc}	Fraction organic carbon	0.005
ρ_b	Soil bulk density	1.66
n	Total porosity	0.38
θ_w	Water-filled soil porosity	0.05
θ_a	Air-filled soil porosity	0.32
DAF	Dilution attenuation factor	20

Only chemicals detected in soil are shown.

$C_{soil-MtGW-Eq}$: Soil screening level based on equilibrium partitioning (EQ)

$C_{soil-MtGW-Lt}$: Soil screening level based on simulated worst-case leach test (LT)

NA: Not applicable - target groundwater concentration times DAF is greater than constituent's solubility.

The K_d for organic compounds is the K_{oc} times the f_{oc} .

Attachment 5

Off-Site Resident Risk Based Screening Level Calculations

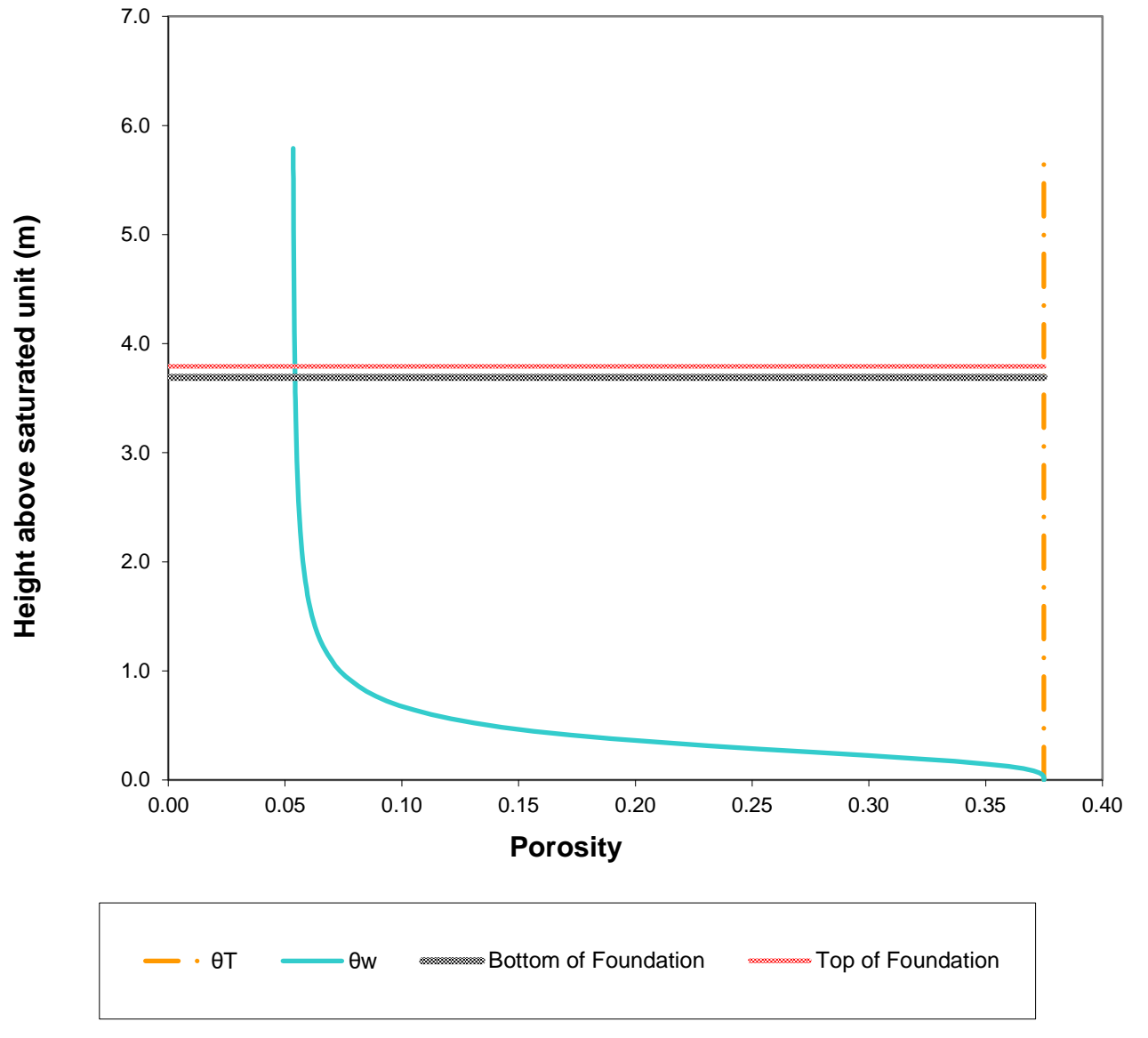
Figure 1 – Soil Moisture Profile for Default PADEP Residential Building (w/ Basement)

Table 1 – Normalized Indoor Air Concentrations in a Default PADEP Residential Building (with Basement) Due to Vapor Intrusion from Groundwater

Table 2 – Unit Risk, Unit HQ, and RBSLs for Groundwater Vapor Intrusion into a Default PADEP Residential Building (with Basement)



Attachment 5
Figure 1: Soil Moisture Profile for Default PADEP Residential Building (w/ Basement)
PESRM Philadelphia Refining Complex, Philadelphia, Pennsylvania



Attachment 5

Table 1:

Normalized Indoor Air Concentration in a Default PADEP Residential Building (w/ Basement) Due to Vapor Intrusion from Groundwater

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	D _{air} (m ² /day)	D _{water} (m ² /day)	H (unitless)	D _{crack} (m ² /day)	D _{eff} ^T (m ² /day)	α _{soil}	α _{slab}	α _∞	C _{b, norm} (L-water/m ³)
VOC	Benzene	71-43-2	7.60E-01	8.47E-05	1.68E-01	1.23E-01	2.49E-03	1.66E-02	4.55E-03	7.55E-05	1.27E-02
VOC	Cumene	98-82-8	5.62E-01	6.13E-05	3.28E-01	9.06E-02	1.03E-03	6.94E-03	4.55E-03	3.16E-05	1.04E-02
VOC	1,2-Dibromoethane	106-93-4	3.72E-01	7.29E-05	2.37E-02	5.99E-02	8.50E-03	5.45E-02	4.55E-03	2.48E-04	5.89E-03
VOC	1,2-Dichloroethane	107-06-2	8.99E-01	8.55E-05	2.92E-02	1.45E-01	1.06E-02	6.68E-02	4.55E-03	3.04E-04	8.87E-03
VOC	Ethyl Benzene	100-41-4	6.48E-01	6.74E-05	2.20E-01	1.05E-01	1.60E-03	1.07E-02	4.55E-03	4.89E-05	1.07E-02
VOC	Methyl tert-butyl ether	1634-04-4	7.42E-01	8.73E-05	1.83E-02	1.20E-01	1.43E-02	8.81E-02	4.55E-03	4.01E-04	7.36E-03
VOC	Toluene	108-88-3	7.52E-01	7.43E-05	1.93E-01	1.21E-01	1.99E-03	1.33E-02	4.55E-03	6.05E-05	1.17E-02
VOC	1,2,4-Trimethylbenzene	95-63-6	5.24E-01	6.84E-05	1.61E-01	8.45E-02	2.03E-03	1.36E-02	4.55E-03	6.19E-05	9.96E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	5.20E-01	7.49E-05	1.54E-01	8.39E-02	2.27E-03	1.52E-02	4.55E-03	6.90E-05	1.06E-02
VOC	Xylenes (total)	1330-20-7	6.74E-01	7.56E-05	2.52E-01	1.09E-01	1.58E-03	1.06E-02	4.55E-03	4.84E-05	1.22E-02
SVOC	Acenaphthene	83-32-9	3.64E-01	6.64E-05	3.40E-03	5.87E-02	2.34E-02	1.37E-01	4.55E-03	6.24E-04	2.12E-03
SVOC	Anthracene	120-12-7	2.80E-01	6.69E-05	1.30E-03	4.52E-02	2.73E-02	1.56E-01	4.55E-03	7.10E-04	9.26E-04
SVOC	Benzo(a)anthracene	56-55-3	4.41E-01	7.78E-05	5.55E-05	7.17E-02	6.73E-02	3.13E-01	4.55E-03	1.43E-03	
SVOC	Benzo(a)pyrene	50-32-8	3.72E-01	7.78E-05	1.49E-05	6.21E-02	6.63E-02	3.10E-01	4.55E-03	1.41E-03	
SVOC	Benzo(b)fluoranthene	205-99-2	1.95E-01	4.80E-05	1.66E-03	3.15E-02	1.80E-02	1.08E-01	4.55E-03	4.94E-04	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.88E-01	4.54E-05	1.10E-05	3.20E-02	3.54E-02	1.94E-01	4.55E-03	8.82E-04	
SVOC	Benzo(k)fluoranthene	207-08-9	1.95E-01	4.80E-05	1.16E-05	3.32E-02	3.67E-02	1.99E-01	4.55E-03	9.07E-04	
SVOC	Chrysene	218-01-9	2.14E-01	5.37E-05	1.48E-03	3.46E-02	2.04E-02	1.22E-01	4.55E-03	5.54E-04	
SVOC	Dibenz(a,h)anthracene	53-70-3	1.75E-01	4.48E-05	9.57E-08	2.24E-01	3.60E-01	7.09E-01	4.55E-03	3.23E-03	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	6.91E-01	6.91E-05	1.03E-06	1.40E-01	1.77E-01	5.45E-01	4.55E-03	2.48E-03	
SVOC	Ethanol	64-17-5	1.06E+00	1.12E-04	1.96E-04	1.72E-01	1.30E-01	4.68E-01	4.55E-03	2.13E-03	
SVOC	Fluorene	86-73-7	3.14E-01	6.81E-05	1.39E-03	5.06E-02	2.93E-02	1.65E-01	4.55E-03	7.54E-04	1.05E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.64E-01	4.89E-05	2.03E-05	2.75E-02	2.94E-02	1.66E-01	4.55E-03	7.57E-04	
SVOC	Naphthalene	91-20-3	5.10E-01	6.48E-05	1.20E-02	8.22E-02	1.37E-02	8.49E-02	4.55E-03	3.87E-04	4.66E-03
SVOC	Phenanthrene	85-01-8	3.24E-01	6.45E-05	1.41E-03	5.23E-02	2.94E-02	1.66E-01	4.55E-03	7.56E-04	1.06E-03
SVOC	Pyrene	129-00-0	2.35E-01	6.26E-05	2.00E-04	3.80E-02	3.26E-02	1.81E-01	4.55E-03	8.24E-04	
SVOC	Tetraethylene Glycol	112-60-7	4.39E-01	6.96E-05	1.62E-11	1.80E+03	2.97E+03	9.97E-01	3.14E-01	3.13E-01	
PCB	PCBs (total)	1336-36-3	1.75E-01	4.32E-05	6.64E-02	2.82E-02	2.27E-03	1.51E-02	4.55E-03	6.89E-05	
INORG	Antimony	7440-36-0									
INORG	Arsenic	7440-38-2									
INORG	Chromium III	16065-83-1									
INORG	Chromium VI	18540-29-9									
INORG	Cyanide (total)	57-12-5	1.35E+00	1.53E-04	1.97E-03	2.17E-01	8.92E-02	3.77E-01	4.55E-03	1.72E-03	3.38E-03
INORG	Lead	7439-92-1									
INORG	Nickel	7440-02-0									
INORG	Vanadium	7440-62-2									

Attachment 5

Table 1:

Normalized Indoor Air Concentration in a Default PADEP Residential Building (w/ Basement) Due to Vapor Intrusion from Groundwater
Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes:

Subsurface and Building Characteristics			Crack Soil
SCS Soil texture class			Sand
Bulk density	kg/L	ρ_b	1.66
Total porosity	L/L-soil	θ_T	0.375
Water-filled porosity	L/L-soil	θ_w	0.054
Air-filled porosity	L/L-soil	θ_a	0.321
Residual saturation	L/L-soil	θ_r	0.053
Hydraulic conductivity	cm/s	K	7.4E-03
Dynamic viscosity of water	g/cm-s	μ_w	0.01307
Density of water	g/cm ³	ρ_w	1.0
Gravitational acceleration	cm/s ²	g	980.7
Intrinsic permeability	cm ²	k	9.9E-08
Relative saturation	unitless	S_e	0.003
van Genuchten N	unitless	N	3.177
van Genuchten M	unitless	M	0.685
Relative air permeability	unitless	k_{rg}	0.998
Permeability to vapor	cm ²	k_v	9.90E-08
Distance from foundation to source	m	L_{T-gw}	3.69
Bldg foundation thickness	m	L_{crack}	0.1
Bldg foundation length	m		10.00
Bldg foundation width	m		10.00
Bldg occupied height	m		3.66
Bldg occupied volume	m ³		366.00
Occupied depth below ground	m		2.0
Bldg area for vapor intrusion	m ²	A_B	180.0
Ratio of A_{crack} to A_B		η	2E-04
Area of cracks	m ²	A_{crack}	4E-02
Air exchange rate	hour ⁻¹	ach	0.18
Building ventilation rate	m ³ /day	Q_{bldg}	1.6E+03
Pressure diff. outdoors-indoors	kg/m-s ²	ΔP	4.0
Viscosity of air	kg/m-s	μ_a	1.8E-05
Crack length (bldg perimeter)	m	X_{crack}	40
Crack depth below ground	m	Z_{crack}	2.10
Crack radius	m	r_{crack}	1E-03
Soil gas flow rate into bldg	m ³ /day	Q_{soil}	7.20

Attachment 5

Table 2:

Unit Risk, Unit HQ, and RBSLs for Groundwater Vapor Intrusion into a Default PADEP Residential Building (w/ Basement)

Resident

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{gw} (mg/L)	C _{air} (mg/m ³)	Cancer			Noncancer		
						URF (mg/m ³) ⁻¹	Risk	RBSL (mg/L)	RfC (mg/m ³)	HQ	RBSL (mg/L)
VOC	Benzene	71-43-2	A	1.00E+00	1.27E-02	7.8E-03	3.5E-05	2.8E-01	3.0E-02	4.1E-01	2.5E-01
VOC	Cumene	98-82-8	D	1.00E+00	1.04E-02				4.0E-01	2.5E-02	4.0E+00
VOC	1,2-Dibromoethane	106-93-4	LC	1.00E+00	5.89E-03	6.0E-01	1.3E-03	7.9E-03	9.0E-03	6.3E-01	1.6E-01
VOC	1,2-Dichloroethane	107-06-2	B2	1.00E+00	8.87E-03	2.6E-02	8.2E-05	1.2E-01	7.0E-03	1.2E+00	8.2E-02
VOC	Ethyl Benzene	100-41-4	D	1.00E+00	1.07E-02				1.0E+00	1.0E-02	9.7E+00
VOC	Methyl tert-butyl ether	1634-04-4	C	1.00E+00	7.36E-03	2.6E-04	6.8E-07	1.5E+01	3.0E+00	2.4E-03	4.2E+01
VOC	Toluene	108-88-3	ID	1.00E+00	1.17E-02				5.0E+00	2.2E-03	4.5E+01
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	1.00E+00	9.96E-03				6.0E-02	1.6E-01	6.3E-01
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	1.00E+00	1.06E-02				6.0E-02	1.7E-01	5.9E-01
VOC	Xylenes (total)	1330-20-7	ID	1.00E+00	1.22E-02				1.0E-01	1.2E-01	8.6E-01
SVOC	Acenaphthene	83-32-9	ID	1.00E+00	2.12E-03						
SVOC	Anthracene	120-12-7	ID	1.00E+00	9.26E-04						
SVOC	Benzo(a)anthracene	56-55-3	B2	1.00E+00		6.0E-02					
SVOC	Benzo(a)pyrene	50-32-8	HC	1.00E+00		6.0E-01			2.0E-06		
SVOC	Benzo(b)fluoranthene	205-99-2	B2	1.00E+00		6.0E-02					
SVOC	Benzo(g,h,i)perylene	191-24-2	D	1.00E+00							
SVOC	Benzo(k)fluoranthene	207-08-9	B2	1.00E+00		6.0E-03					
SVOC	Chrysene	218-01-9	B2	1.00E+00		6.0E-04					
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	1.00E+00		6.0E-01					
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	C	1.00E+00		7.1E+01					
SVOC	Ethanol	64-17-5		1.00E+00					1.9E+01		
SVOC	Fluorene	86-73-7	D	1.00E+00	1.05E-03						
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	1.00E+00		6.0E-02					
SVOC	Naphthalene	91-20-3	C	1.00E+00	4.66E-03	3.4E-02	5.6E-05	1.8E-01	3.0E-03	1.5E+00	6.7E-02
SVOC	Phenanthrene	85-01-8	D	1.00E+00	1.06E-03						
SVOC	Pyrene	129-00-0	NC	1.00E+00							
SVOC	Tetraethylene Glycol	112-60-7		1.00E+00							
PCB	PCBs (total)	1336-36-3	B2	1.00E+00		5.7E-01					
INORG	Antimony	7440-36-0	ID	1.00E+00							
INORG	Arsenic	7440-38-2	A	1.00E+00		4.3E+00			1.5E-05		
INORG	Chromium III	16065-83-1	D	1.00E+00					5.0E-03		
INORG	Chromium VI	18540-29-9	A	1.00E+00		1.2E+01			1.0E-04		
INORG	Cyanide (total)	57-12-5		1.00E+00	3.38E-03				8.0E-04	4.1E+00	2.5E-02
INORG	Lead	7439-92-1	B2	1.00E+00							

Attachment 5

Table 2:

Unit Risk, Unit HQ, and RBSLs for Groundwater Vapor Intrusion into a Default PADEP Residential Building (w/ Basement)

Resident

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Carc Class	C _{gw} (mg/L)	C _{air} (mg/m ³)	Cancer			Noncancer		
						URF (mg/m ³) ⁻¹	Risk	RBSL (mg/L)	RfC (mg/m ³)	HQ	RBSL (mg/L)
INORG	Nickel	7440-02-0	A	1.00E+00		2.4E-01			9.0E-05		
INORG	Vanadium	7440-62-2	ID	1.00E+00					1.0E-04		

Notes:

Cancer RBSLs are calculated at a target cancer risk of 1E-05.

Noncancer RBSLs are calculated at a target HQ of 0.1.

Attachment 6

Nonpotable Groundwater Use Risk Based Screening Level Calculation

Table 1 – Normalized Vapor Flux to Outdoor Air from Residential Kiddie Pool

Table 2 – Nonsteady State Dermal Absorption of Chemicals from Water in Residential Kiddie Pool

Table 3 – Dispersion Factor to Outdoor Air

Table 4a – Unit Risk and Cancer-Based RBSLs for Exposure of Resident to Groundwater in Kiddie Pools

Table 4b – Unit HQ and Noncancer-Based RBSLs for Exposure of Resident to Groundwater in Kiddie Pools



Attachment 6

Table 1:

Normalized Vapor Flux to Outdoor Air from Residential Kiddie Pool

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	H (unitless)	D _{air} (m ² /d)	D _{water} (m ² /d)	Sc _L (unitless)	Sc _G (unitless)	k _L (m/s)	k _G (m/s)	K _L (cm/s)	C _{avg} /C ₀ (unitless)	J _L (L/m ² -s)
VOC	Benzene	71-43-2	1.7E-01	7.6E-01	8.5E-05	9.1E+02	1.7E+00	5.73E-06	9.43E-03	5.71E-06	4.10E-01	2.34E-03
VOC	Cumene	98-82-8	3.3E-01	5.6E-01	6.1E-05	1.3E+03	2.3E+00	5.02E-06	7.69E-03	5.01E-06	4.48E-01	2.25E-03
VOC	1,2-Dibromoethane	106-93-4	2.4E-02	3.7E-01	7.3E-05	1.1E+03	3.5E+00	5.39E-06	5.83E-03	5.18E-06	4.38E-01	2.27E-03
VOC	1,2-Dichloroethane	107-06-2	2.9E-02	9.0E-01	8.6E-05	9.0E+02	1.5E+00	5.75E-06	1.05E-02	5.64E-06	4.13E-01	2.33E-03
VOC	Ethyl Benzene	100-41-4	2.2E-01	6.5E-01	6.7E-05	1.1E+03	2.0E+00	5.22E-06	8.47E-03	5.20E-06	4.37E-01	2.28E-03
VOC	Methyl tert-butyl ether	1634-04-4	1.8E-02	7.4E-01	8.7E-05	8.8E+02	1.8E+00	5.80E-06	9.28E-03	5.61E-06	4.15E-01	2.33E-03
VOC	Toluene	108-88-3	1.9E-01	7.5E-01	7.4E-05	1.0E+03	1.7E+00	5.43E-06	9.35E-03	5.41E-06	4.26E-01	2.30E-03
VOC	1,2,4-Trimethylbenzene	95-63-6	1.6E-01	5.2E-01	6.8E-05	1.1E+03	2.5E+00	5.25E-06	7.34E-03	5.23E-06	4.36E-01	2.28E-03
VOC	1,3,5-Trimethylbenzene	108-67-8	1.5E-01	5.2E-01	7.5E-05	1.0E+03	2.5E+00	5.45E-06	7.31E-03	5.42E-06	4.25E-01	2.30E-03
VOC	Xylenes (total)	1330-20-7	2.5E-01	6.7E-01	7.6E-05	1.0E+03	1.9E+00	5.46E-06	8.69E-03	5.45E-06	4.24E-01	2.31E-03
SVOC	Acenaphthene	83-32-9	3.4E-03	3.6E-01	6.6E-05	1.2E+03	3.6E+00	5.19E-06	5.75E-03	4.10E-06	5.08E-01	2.08E-03
SVOC	Anthracene	120-12-7	1.3E-03	2.8E-01	6.7E-05	1.2E+03	4.7E+00	5.20E-06	4.83E-03	2.85E-06	6.12E-01	1.74E-03
SVOC	Benzo(a)anthracene	56-55-3	5.6E-05	4.4E-01	7.8E-05	9.9E+02	3.0E+00	5.53E-06	6.54E-03	3.41E-07	9.38E-01	
SVOC	Benzo(a)pyrene	50-32-8	1.5E-05	3.7E-01	7.8E-05	9.9E+02	3.5E+00	5.53E-06	5.83E-03	8.58E-08	9.84E-01	
SVOC	Benzo(b)fluoranthene	205-99-2	1.7E-03	2.0E-01	4.8E-05	1.6E+03	6.7E+00	4.56E-06	3.79E-03	2.64E-06	6.32E-01	
SVOC	Benzo(g,h,i)perylene	191-24-2	1.1E-05	1.9E-01	4.5E-05	1.7E+03	6.9E+00	4.46E-06	3.69E-03	4.02E-08	9.92E-01	
SVOC	Benzo(k)fluoranthene	207-08-9	1.2E-05	2.0E-01	4.8E-05	1.6E+03	6.7E+00	4.56E-06	3.79E-03	4.34E-08	9.92E-01	
SVOC	Chrysene	218-01-9	1.5E-03	2.1E-01	5.4E-05	1.4E+03	6.1E+00	4.76E-06	4.03E-03	2.65E-06	6.32E-01	
SVOC	Dibenz(a,h)anthracene	53-70-3	9.6E-08	1.7E-01	4.5E-05	1.7E+03	7.5E+00	4.44E-06	3.52E-03	3.37E-10	1.00E+00	
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	1.0E-06	6.9E-01	6.9E-05	1.1E+03	1.9E+00	5.27E-06	8.84E-03	9.12E-09	9.98E-01	
SVOC	Ethanol	64-17-5	2.0E-04	1.1E+00	1.1E-04	6.9E+02	1.2E+00	6.44E-06	1.18E-02	1.70E-06	7.38E-01	
SVOC	Fluorene	86-73-7	1.4E-03	3.1E-01	6.8E-05	1.1E+03	4.2E+00	5.24E-06	5.21E-03	3.04E-06	5.95E-01	1.81E-03
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.0E-05	1.6E-01	4.9E-05	1.6E+03	7.9E+00	4.59E-06	3.38E-03	6.75E-08	9.87E-01	
SVOC	Naphthalene	91-20-3	1.2E-02	5.1E-01	6.5E-05	1.2E+03	2.6E+00	5.13E-06	7.21E-03	4.85E-06	4.58E-01	2.22E-03
SVOC	Phenanthrene	85-01-8	1.4E-03	3.2E-01	6.5E-05	1.2E+03	4.0E+00	5.13E-06	5.32E-03	3.04E-06	5.94E-01	1.81E-03
SVOC	Pyrene	129-00-0	2.0E-04	2.4E-01	6.3E-05	1.2E+03	5.5E+00	5.06E-06	4.29E-03	7.35E-07	8.73E-01	
SVOC	Tetraethylene Glycol	112-60-7	1.6E-11	4.4E-01	7.0E-05	1.1E+03	3.0E+00	5.28E-06	6.52E-03	1.06E-13	1.00E+00	
PCB	PCBs (total)	1336-36-3	6.6E-02	1.7E-01	4.3E-05	1.8E+03	7.5E+00	4.38E-06	3.52E-03	4.30E-06	4.94E-01	
INORG	Antimony	7440-36-0										
INORG	Arsenic	7440-38-2										
INORG	Chromium III	16065-83-1										
INORG	Chromium VI	18540-29-9										
INORG	Cyanide (total)	57-12-5	2.0E-03	1.3E+00	1.5E-04	5.0E+02	9.7E-01	7.35E-06	1.38E-02	5.79E-06	4.06E-01	2.35E-03
INORG	Lead	7439-92-1										
INORG	Nickel	7440-02-0										
INORG	Vanadium	7440-62-2										

Attachment 6

Table 1:

Normalized Vapor Flux to Outdoor Air from Residential Kiddie Pool

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Notes: Water density (g/cm ³)	ρ_w	1.00E+00
Water viscosity (g/cm-s)	v_w	8.93E-03
Air density (g/cm ³)	ρ_a	1.20E-03
Air viscosity (g/cm-s)	v_a	1.81E-04
Wind speed (mph)	u_{10}	9.3
Wind speed (m/s)	u_{10}	4.2
Friction velocity (m/s)	u	0.123
Pool effective diameter (m)	d_e	2.1
Pool water surface area (m ²)	A	3.3
Pool water depth (m)	d	0.23
Pool water volume (m ³)	V	0.76
Fetch-to-depth ratio	F/D	9.0
Averaging period (days)	t	1.0

Attachment 6

Table 3:

Dispersion Factor to Outdoor Air

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Parameter	Units	Value
Correlation coefficient city		Philadelphia
Correlation coefficient A		14.0111
Correlation coefficient B		19.6154
Correlation coefficient C		225.3397

Source area	acres	0.0008
Groundwater averaging time for C/Q		1-Hour Max
C/Q	$(L/m^3)/(L/m^2-s)$	15.83

Note:

C/Q is estimated using the empirical correlation in USEPA's (2002) Supplemental Soil Screening Guidance.

Attachment 6

Table 4a:

Unit Risk and Cancer-Based RBSLs for Exposure of Residents to Groundwater in Kiddie Pools

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	Cancer Class	ADAF	C _{gw} (mg/l)	Incidental Ingestion					Dermal Contact					Vapor Inhalation					All Routes		
						LADD (mg/kg/d)	SF _{oral} (mg/kg/d) ⁻¹	f _{oral}	Risk	RBSL (mg/L)	DA (L/cm ² -event)	LADD (mg/kg/d)	SF _{derm} (mg/kg/d) ⁻¹	f _{oral}	Risk	RBSL (mg/L)	C _{air} (mg/m ³)	URF (mg/m ³) ⁻¹	f _{inh}	Risk	RBSL (mg/L)	Risk	RBSL (mg/L)
VOC	Benzene	71-43-2	A	N	1.00E+00	1.06E-04	5.5E-02		5.8E-06	1.7E+00	3.70E-05	4.65E-04	5.5E-02		2.6E-05	3.9E-01	3.70E-02	7.8E-03		2.4E-06	4.3E+00	3.4E-05	3.0E-01
VOC	Cumene	98-82-8	D	N	1.00E+00	1.16E-04											3.56E-02						
VOC	1,2-Dibromoethane	106-93-4	LC	N	1.00E+00	1.13E-04	2.0E+00		2.3E-04	4.4E-02	6.81E-06	9.15E-05	2.0E+00		1.8E-04	5.5E-02	3.60E-02	6.0E-01		1.8E-04	5.7E-02	5.8E-04	1.7E-02
VOC	1,2-Dichloroethane	107-06-2	B2	N	1.00E+00	1.06E-04	9.1E-02		9.7E-06	1.0E+00	1.13E-05	1.43E-04	9.1E-02		1.3E-05	7.7E-01	3.69E-02	2.6E-02		7.8E-06	1.3E+00	3.1E-05	3.3E-01
VOC	Ethyl Benzene	100-41-4	D	N	1.00E+00	1.13E-04					1.27E-04	1.70E-03					3.60E-02						
VOC	Methyl tert-butyl ether	1634-04-4	C	N	1.00E+00	1.07E-04	1.8E-03		1.9E-07	5.2E+01	8.84E-06	1.12E-04	1.8E-03		2.0E-07	4.9E+01	3.68E-02	2.6E-04		7.8E-08	1.3E+02	4.7E-07	2.1E+01
VOC	Toluene	108-88-3	ID	N	1.00E+00	1.10E-04					8.08E-05	1.05E-03					3.65E-02						
VOC	1,2,4-Trimethylbenzene	95-63-6	ID	N	1.00E+00	1.12E-04											3.61E-02						
VOC	1,3,5-Trimethylbenzene	108-67-8	ID	N	1.00E+00	1.10E-04											3.65E-02						
VOC	Xylenes (total)	1330-20-7	ID	N	1.00E+00	1.09E-04					1.32E-04	1.71E-03					3.65E-02						
SVOC	Acenaphthene	83-32-9	ID	N	1.00E+00	1.31E-04											3.30E-02						
SVOC	Anthracene	120-12-7	ID	N	1.00E+00	1.58E-04											2.76E-02						
SVOC	Benzo(a)anthracene	56-55-3	B2	Y	1.00E+00	2.42E-04	1.0E-01	1	9.5E-05	1.0E-01			1.0E-01	1				6.0E-02	1			9.5E-05	1.0E-01
SVOC	Benzo(a)pyrene	50-32-8	HC	Y	1.00E+00	2.54E-04	1.0E+00	1	1.0E-03	1.0E-02			1.0E+00	1				6.0E-01	1			1.0E-03	1.0E-02
SVOC	Benzo(b)fluoranthene	205-99-2	B2	Y	1.00E+00	1.63E-04	1.0E-01	1	6.4E-05	1.6E-01			1.0E-01	1				6.0E-02	1			6.4E-05	1.6E-01
SVOC	Benzo(g,h,i)perylene	191-24-2	D	N	1.00E+00	2.56E-04																	
SVOC	Benzo(k)fluoranthene	207-08-9	B2	Y	1.00E+00	2.56E-04	1.0E-02	1	1.0E-05	9.9E-01			1.0E-02	1				6.0E-03	1			1.0E-05	9.9E-01
SVOC	Chrysene	218-01-9	B2	Y	1.00E+00	1.63E-04	1.0E-03	1	6.4E-07	1.6E+01			1.0E-03	1				6.0E-04	1			6.4E-07	1.6E+01
SVOC	Dibenz(a,h)anthracene	53-70-3	B2	Y	1.00E+00	2.58E-04	1.0E+00	1	1.0E-03	9.8E-03			1.0E+00	1				6.0E-01	1			1.0E-03	9.8E-03
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	C	Y	1.00E+00	2.57E-04	2.5E+02	1	2.5E-01	3.9E-05			2.5E+02	1				7.1E+01	1			2.5E-01	3.9E-05
SVOC	Ethanol	64-17-5		N	1.00E+00	1.90E-04					1.30E-06	2.94E-05											
SVOC	Fluorene	86-73-7	D	N	1.00E+00	1.53E-04											2.86E-02						
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	B2	Y	1.00E+00	2.54E-04	1.0E-01	1	1.0E-04	1.0E-01			1.0E-01	1				6.0E-02	1			1.0E-04	1.0E-01
SVOC	Naphthalene	91-20-3	C	N	1.00E+00	1.18E-04	1.2E-01		1.4E-05	7.1E-01			1.2E-01				3.52E-02	3.4E-02		9.7E-06	1.0E+00	2.4E-05	4.2E-01
SVOC	Phenanthrene	85-01-8	D	N	1.00E+00	1.53E-04											2.86E-02						
SVOC	Pyrene	129-00-0	NC	N	1.00E+00	2.25E-04																	
SVOC	Tetraethylene Glycol	112-60-7		N	1.00E+00	2.58E-04																	
PCB	PCBs (total)	1336-36-3	B2	N	1.00E+00	1.27E-04	2.0E+00		2.5E-04	3.9E-02			2.0E+00					5.7E-01				2.5E-04	3.9E-02
INORG	Antimony	7440-36-0	ID	N	1.00E+00	2.58E-04					2.00E-06	6.13E-05											
INORG	Arsenic	7440-38-2	A	N	1.00E+00	2.58E-04	1.5E+00		3.9E-04	2.6E-02	2.00E-06	6.13E-05	1.5E+00		9.2E-05	1.1E-01		4.3E+00				4.8E-04	2.1E-02
INORG	Chromium III	16065-83-1	D	N	1.00E+00	2.58E-04					2.00E-06	6.13E-05											
INORG	Chromium VI	18540-29-9	A	N	1.00E+00	2.58E-04	5.0E-01		1.3E-04	7.8E-02	4.00E-06	1.23E-04	2.0E+01		2.5E-03	4.1E-03		1.2E+01				2.6E-03	3.9E-03
INORG	Cyanide (total)	57-12-5		N	1.00E+00	1.05E-04					2.00E-06	2.49E-05					3.72E-02						
INORG	Lead	7439-92-1	B2	N	1.00E+00	2.58E-04					2.00E-07	6.13E-06											
INORG	Nickel	7440-02-0	A	N	1.00E+00	2.58E-04					4.00E-07	1.23E-05						2.4E-01					
INORG	Vanadium	7440-62-2	ID	N	1.00E+00	2.58E-04					2.00E-06	6.13E-05											

Notes:

f_{oral} and f_{inh} are the fraction of the oral and inhalation toxicity values, respectively, that USEPA identified as having a mutagenic mode of action.

Cancer RBSLs are calculated at a target cancer risk of 1E-05.

Attachment 6

Table 4b:

Unit HQ and Noncancer-Based RBSLs for Exposure of Residents to Groundwater in Kiddie Pools

Philadelphia Energy Solutions Refining & Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Chem Group	Chemical	CASRN	C _{gw} (mg/L)	Incidental Ingestion				Dermal Contact					Vapor Inhalation				All Routes	
				ADD (mg/kg/d)	RfD _{oral} (mg/kg/d)	HQ	RBSL (mg/L)	DA (L/cm ² -event)	ADD (mg/kg/d)	RfD _{derm} (mg/kg/d)	HQ	RBSL (mg/L)	C _{air} (mg/m ³)	RfC (mg/m ³)	HQ	RBSL (mg/L)	HQ	RBSL (mg/L)
VOC	Benzene	71-43-2	1.00E+00	2.84E-04	1.0E-02	2.8E-02	3.5E+00	3.70E-05	1.25E-03	1.0E-02	1.3E-01	8.0E-01	3.70E-02	9.0E-02	9.0E-03	1.1E+01	1.6E-01	6.1E-01
VOC	Cumene	98-82-8	1.00E+00	3.11E-04	4.0E-01	7.8E-04	1.3E+02			4.0E-01			3.56E-02	4.0E-01	1.9E-03	5.1E+01	2.7E-03	3.7E+01
VOC	1,2-Dibromoethane	106-93-4	1.00E+00	3.04E-04	9.0E-03	3.4E-02	3.0E+00	6.81E-06	2.46E-04	9.0E-03	2.7E-02	3.7E+00	3.60E-02	9.0E-03	8.8E-02	1.1E+00	1.5E-01	6.7E-01
VOC	1,2-Dichloroethane	107-06-2	1.00E+00	2.87E-04	2.0E-02	1.4E-02	7.0E+00	1.13E-05	3.85E-04	2.0E-02	1.9E-02	5.2E+00	3.69E-02	7.0E-02	1.2E-02	8.7E+00	4.5E-02	2.2E+00
VOC	Ethyl Benzene	100-41-4	1.00E+00	3.03E-04	1.0E-01	3.0E-03	3.3E+01	1.27E-04	4.58E-03	1.0E-01	4.6E-02	2.2E+00	3.60E-02	9.0E+00	8.8E-05	1.1E+03	4.9E-02	2.0E+00
VOC	Methyl tert-butyl ether	1634-04-4	1.00E+00	2.88E-04	3.0E-01	9.6E-04	1.0E+02	8.84E-06	3.03E-04	3.0E-01	1.0E-03	9.9E+01	3.68E-02	3.0E+00	2.7E-04	3.7E+02	2.2E-03	4.5E+01
VOC	Toluene	108-88-3	1.00E+00	2.95E-04	8.0E-01	3.7E-04	2.7E+02	8.08E-05	2.84E-03	8.0E-01	3.5E-03	2.8E+01	3.65E-02	5.0E+00	1.6E-04	6.3E+02	4.1E-03	2.5E+01
VOC	1,2,4-Trimethylbenzene	95-63-6	1.00E+00	3.02E-04	4.0E-02	7.6E-03	1.3E+01			4.0E-02			3.61E-02	2.0E-01	4.0E-03	2.5E+01	1.2E-02	8.7E+00
VOC	1,3,5-Trimethylbenzene	108-67-8	1.00E+00	2.95E-04	4.0E-02	7.4E-03	1.4E+01			4.0E-02			3.65E-02	2.0E-01	4.0E-03	2.5E+01	1.1E-02	8.8E+00
VOC	Xylenes (total)	1330-20-7	1.00E+00	2.94E-04	2.0E-01	1.5E-03	6.8E+01	1.32E-04	4.61E-03	2.0E-01	2.3E-02	4.3E+00	3.65E-02	3.0E-01	2.7E-03	3.7E+01	2.7E-02	3.7E+00
SVOC	Acenaphthene	83-32-9	1.00E+00	3.53E-04	2.0E-01	1.8E-03	5.7E+01			2.0E-01			3.30E-02				1.8E-03	5.7E+01
SVOC	Anthracene	120-12-7	1.00E+00	4.25E-04	1.0E+00	4.2E-04	2.4E+02			1.0E+00			2.76E-02				4.2E-04	2.4E+02
SVOC	Benzo(a)anthracene	56-55-3	1.00E+00	6.51E-04														
SVOC	Benzo(a)pyrene	50-32-8	1.00E+00	6.83E-04	3.0E-04	2.3E+00	4.4E-02			3.0E-04				2.0E-06			2.3E+00	4.4E-02
SVOC	Benzo(b)fluoranthene	205-99-2	1.00E+00	4.39E-04														
SVOC	Benzo(g,h,i)perylene	191-24-2	1.00E+00	6.88E-04	3.0E-01	2.3E-03	4.4E+01			3.0E-01							2.3E-03	4.4E+01
SVOC	Benzo(k)fluoranthene	207-08-9	1.00E+00	6.88E-04														
SVOC	Chrysene	218-01-9	1.00E+00	4.38E-04														
SVOC	Dibenz(a,h)anthracene	53-70-3	1.00E+00	6.94E-04														
SVOC	7,12-Dimethylbenz(a)anthracene	57-97-6	1.00E+00	6.92E-04														
SVOC	Ethanol	64-17-5	1.00E+00	5.12E-04	6.2E+01	8.3E-06	1.2E+04	1.30E-06	7.91E-05	6.2E+01	1.3E-06	7.8E+04		1.9E+01			9.5E-06	1.0E+04
SVOC	Fluorene	86-73-7	1.00E+00	4.13E-04	4.0E-01	1.0E-03	9.7E+01			4.0E-01			2.86E-02				1.0E-03	9.7E+01
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	1.00E+00	6.85E-04														
SVOC	Naphthalene	91-20-3	1.00E+00	3.18E-04	2.0E-01	1.6E-03	6.3E+01			2.0E-01			3.52E-02	3.0E-03	2.6E-01	3.9E-01	2.6E-01	3.9E-01
SVOC	Phenanthrene	85-01-8	1.00E+00	4.12E-04	3.0E-01	1.4E-03	7.3E+01			3.0E-01			2.86E-02				1.4E-03	7.3E+01
SVOC	Pyrene	129-00-0	1.00E+00	6.06E-04	3.0E-01	2.0E-03	5.0E+01			3.0E-01							2.0E-03	5.0E+01
SVOC	Tetraethylene Glycol	112-60-7	1.00E+00	6.94E-04	2.0E+00	3.5E-04	2.9E+02			2.0E+00							3.5E-04	2.9E+02
PCB	PCBs (total)	1336-36-3	1.00E+00	3.43E-04	5.0E-05	6.9E+00	1.5E-02			5.0E-05							6.9E+00	1.5E-02
INORG	Antimony	7440-36-0	1.00E+00	6.94E-04	4.0E-04	1.7E+00	5.8E-02	2.00E-06	1.65E-04	6.0E-05	2.8E+00	3.6E-02					4.5E+00	2.2E-02
INORG	Arsenic	7440-38-2	1.00E+00	6.94E-04	5.0E-03	1.4E-01	7.2E-01	2.00E-06	1.65E-04	5.0E-03	3.3E-02	3.0E+00		1.5E-05			1.7E-01	5.8E-01
INORG	Chromium III	16065-83-1	1.00E+00	6.94E-04	1.5E+00	4.6E-04	2.2E+02	2.00E-06	1.65E-04	2.0E-02	8.5E-03	1.2E+01		5.0E-03			8.9E-03	1.1E+01
INORG	Chromium VI	18540-29-9	1.00E+00	6.94E-04	5.0E-03	1.4E-01	7.2E-01	4.00E-06	3.30E-04	1.3E-04	2.6E+00	3.8E-02		1.0E-03			2.8E+00	3.6E-02
INORG	Cyanide (total)	57-12-5	1.00E+00	2.81E-04	6.0E-03	4.7E-02	2.1E+00	2.00E-06	6.70E-05	6.0E-03	1.1E-02	9.0E+00	3.72E-02	3.0E-03	2.7E-01	3.7E-01	3.3E-01	3.0E-01
INORG	Lead	7439-92-1	1.00E+00	6.94E-04				2.00E-07	1.65E-05									
INORG	Nickel	7440-02-0	1.00E+00	6.94E-04	2.0E-02	3.5E-02	2.9E+00	4.00E-07	3.30E-05	8.0E-04	4.1E-02	2.4E+00		2.0E-04			7.6E-02	1.3E+00
INORG	Vanadium	7440-62-2	1.00E+00	6.94E-04	1.0E-02	6.9E-02	1.4E+00	2.00E-06	1.65E-04	2.6E-04	6.4E-01	1.6E-01		1.0E-04			7.0E-01	1.4E-01

Notes:

Noncancer RBSLs are calculated at a target HQ of 0.1.

Appendix C

Analytical Data



Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-191-01	PB-191-02	PB-191-03	PB-191-04	PB-191-05	PB-191-06	PB-191-07	PB-191-07
Field Sample ID						PB-191-01-SS01	PB-191-02-SS01	PB-191-03-SS01	PB-191-04-SS01	PB-191-05-SS01	PB-191-06-SS01	PB-191-07-SS01	DUP-25
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		4.0 - 4.5	3.5 - 4.0	3.0 - 3.5	1.5 - 2.0	3.0 - 3.5	0.5 - 1.0	4.5 - 5.0	4.5 - 5.0
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						12/9/2021	12/9/2021	7/15/2022	12/9/2021	12/9/2021	12/9/2021	12/9/2021	12/9/2021
Comments											Field Duplicate		
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00073)	0.0094 (0.0012)	ND (0.00066)	0.0012 (0.00065)	ND (0.00058)	ND (0.00057)	ND (0.0011)	ND (0.00071)	
Cumene	1000	6.1	87	1000	ND (0.0014)	0.0022 J (0.0024)	ND (0.0013)	0.0015 (0.0013)	0.00027 J (0.0012)	0.0036 (0.0011)	ND (0.0022)	0.0082 (0.0014)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00073)	ND (0.0012)	ND (0.00066)	ND (0.00065)	ND (0.00058)	ND (0.00057)	ND (0.0011)	ND (0.00071)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0014)	ND (0.0024)	ND (0.0013)	ND (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.0022)	ND (0.0014)	
Ethyl Benzene	2300	15	1300	820	ND (0.0014)	0.0012 J (0.0024)	ND (0.0013)	0.001 J (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.0022)	ND (0.0014)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0029)	ND (0.0049)	ND (0.0026)	ND (0.0026)	ND (0.0023)	ND (0.0023)	ND (0.0043)	ND (0.0028)	
Toluene	8000	76	650	9800	ND (0.0014)	0.0015 J (0.0024)	ND (0.0013)	ND (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.0022)	ND (0.0014)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0029)	0.0013 J (0.0049)	ND (0.0026)	0.0023 J (0.0026)	ND (0.0023)	0.00046 J (0.0023)	ND (0.0043)	ND (0.0028)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0029)	0.00054 J (0.0049)	ND (0.0026)	0.0013 J (0.0026)	ND (0.0023)	ND (0.0023)	ND (0.0043)	ND (0.0028)	
Xylenes (total)	240	1.5	51	340	ND (0.0014)	0.0047 J (0.0024)	ND (0.0013)	0.0032 J (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.0022)	ND (0.0014)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.12)	0.049 J (0.13)	ND (0.1)	ND (0.6)	0.16 (0.12)	ND (0.12)	
Benzo(a)anthracene	430	--	3200	--	0.17 (0.12)	0.077 J (0.12)	0.11 J (0.12)	0.095 J (0.13)	ND (0.1)	ND (0.6)	0.21 (0.12)	ND (0.12)	
Benzo(a)pyrene	43	--	7.7	--	0.15 J (0.16)	0.071 J (0.16)	0.12 J (0.17)	0.076 J (0.18)	ND (0.14)	ND (0.8)	0.18 (0.16)	ND (0.16)	
Benzo(b)fluoranthene	430	--	3200	--	0.19 (0.12)	0.089 J (0.12)	0.13 (0.12)	0.099 J (0.13)	ND (0.1)	ND (0.6)	0.17 (0.12)	ND (0.12)	
Benzo(g,h,i)perylene	4600	--	14000	--	0.088 J (0.16)	0.062 J (0.16)	0.06 J (0.17)	0.056 J (0.18)	ND (0.14)	ND (0.8)	0.19 (0.16)	ND (0.16)	
Chrysene	43000	--	320000	--	0.16 (0.12)	0.08 J (0.12)	0.1 J (0.12)	0.095 J (0.13)	ND (0.1)	ND (0.6)	0.26 (0.12)	ND (0.12)	
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.21)	ND (0.21)	0.054 J (0.22)	ND (0.18)	ND (1)	0.061 J (0.2)	0.044 J (0.2)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.1 J (0.16)	0.055 J (0.16)	0.07 J (0.17)	0.056 J (0.18)	ND (0.14)	ND (0.8)	0.11 J (0.16)	ND (0.16)	
Naphthalene	41	0.54	6	27	0.039 J (0.2)	0.063 J (0.21)	ND (0.21)	0.1 J (0.22)	ND (0.18)	ND (1)	0.23 (0.2)	ND (0.2)	
Phenanthrene	4600	--	14000	--	0.11 J (0.12)	0.092 J (0.12)	ND (0.12)	0.19 (0.13)	ND (0.1)	ND (0.6)	0.77 (0.12)	ND (0.12)	
Pyrene	4600	--	14000	--	0.22 (0.12)	0.1 J (0.12)	0.16 (0.12)	0.14 (0.13)	ND (0.1)	ND (0.6)	0.44 (0.12)	0.021 J (0.12)	
Metals													
Lead	2520	--	2520	45000	110 (2.34)	46.8 (2.36)	19.8 (2.41)	295 (2.62)	12.8 (10.5)	26.5 (2.38)	176 (4.59)	218 (4.72)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-191-08	PB-826-01	PB-826-02	PB-826-03	PB-826-04	PB-826-05	PB-826-06	PB-826-07
Field Sample ID						PB-191-08-SS01	PB-826-01-SS01	PB-826-02-SS01	PB-826-03-SS01	PB-826-04-SS01	PB-826-05-SS01	PB-826-06-SS01	PB-826-07-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						12/9/2021	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.0003 J (0.00057)	ND (0.00069)	ND (0.00052)	ND (0.00063)	ND (0.00097)	ND (0.00055)	ND (0.00075)	ND (0.00061)	ND (0.00061)
Cumene	1000	6.1	87	1000	0.003 (0.0011)	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.0012)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00057)	ND (0.00069)	ND (0.00052)	ND (0.00063)	ND (0.00097)	ND (0.00055)	ND (0.00075)	ND (0.00061)	ND (0.00061)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.0012)
Ethyl Benzene	2300	15	1300	820	0.00021 J (0.0011)	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.0012)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0023)	0.00032 J (0.0028)	0.001 J (0.0021)	0.02 (0.0025)	0.0012 J (0.0039)	ND (0.0022)	0.013 (0.003)	0.016 (0.0024)	0.016 (0.0024)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.0012)
1,2,4-Trimethylbenzene	180	0.92	70	250	0.0031 (0.0023)	ND (0.0028)	ND (0.0021)	ND (0.0025)	ND (0.0039)	ND (0.0022)	ND (0.003)	ND (0.0024)	ND (0.0024)
1,3,5-Trimethylbenzene	220	0.92	99	240	0.00066 J (0.0023)	ND (0.0028)	ND (0.0021)	ND (0.0025)	ND (0.0039)	ND (0.0022)	ND (0.003)	ND (0.0024)	ND (0.0024)
Xylenes (total)	240	1.5	51	340	0.0023 (0.0011)	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.0012)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	0.047 J (0.12)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	0.054 J (0.12)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	0.043 J (0.16)	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--	0.052 J (0.12)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.19)	ND (0.2)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.17)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.031 J (0.16)	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.059 J (0.19)	ND (0.2)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.17)	ND (0.17)
Phenanthrene	4600	--	14000	--	0.084 J (0.12)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Pyrene	4600	--	14000	--	0.07 J (0.12)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Metals													
Lead	2520	--	2520	45000	84.5 (2.3)	3.14 J (4.68)	3.36 J (4.04)	3.14 J (4.08)	3.88 J (4.14)	3.46 J (4.14)	8.1 J (10.4)	3.19 J (10.3)	3.19 J (10.3)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-826-08	PB-826-09	PB-826-10	PB-826-11	PB-826-12	PB-826-13	PB-826-14	PB-826-15
Field Sample ID					PB-826-08-SS01	PB-826-09-SS01	PB-826-10-SS01	PB-826-11-SS01	PB-826-12-SS01	PB-826-13-SS01	PB-826-14-SS01	PB-826-15-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	4.5 - 5.0	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/13/2022	7/13/2022	7/13/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	0.00033 J (0.00051)	ND (0.00068)	ND (0.00073)	ND (0.00059)	ND (0.00055)	ND (0.0007)	ND (0.031)	ND (0.00086)
Cumene	1000	6.1	87	1000	ND (0.001)	ND (0.0014)	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	0.28 (0.062)	ND (0.0017)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00051)	ND (0.00068)	ND (0.00073)	ND (0.00059)	ND (0.00055)	ND (0.0007)	ND (0.031)	ND (0.00086)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.001)	ND (0.0014)	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	ND (0.062)	ND (0.0017)
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.0014)	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	0.73 (0.062)	ND (0.0017)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.002)	ND (0.0027)	ND (0.0029)	ND (0.0024)	ND (0.0022)	ND (0.0028)	ND (0.12)	ND (0.0034)
Toluene	8000	76	650	9800	ND (0.001)	ND (0.0014)	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	ND (0.062)	ND (0.0017)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.002)	ND (0.0027)	ND (0.0029)	ND (0.0024)	ND (0.0022)	ND (0.0028)	<u>12 (0.12)</u>	ND (0.0034)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.002)	ND (0.0027)	ND (0.0029)	ND (0.0024)	ND (0.0022)	ND (0.0028)	<u>4.4 (0.12)</u>	ND (0.0034)
Xylenes (total)	240	1.5	51	340	ND (0.001)	ND (0.0014)	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	0.21 J (0.062)	ND (0.0017)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.061 J (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.03 J (0.12)	0.069 J (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	0.053 J (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.12)	0.055 J (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	0.041 J (0.15)
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.042 J (0.12)	0.095 J (0.12)
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.2)	ND (0.18)	ND (0.18)	ND (0.17)	ND (0.18)	0.18 J (0.19)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.2)	ND (0.2)	ND (0.18)	ND (0.18)	ND (0.17)	ND (0.18)	0.32 (0.19)	0.052 J (0.19)
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.64 (0.12)	0.15 (0.12)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.16 (0.12)	0.18 (0.12)
Metals												
Lead	2520	--	2520	45000	4.67 J (4.69)	5.55 (4.83)	3.72 J (4.13)	3.61 J (4.12)	3 J (4.04)	4.29 (4.12)	8.32 (2.23)	162 (2.2)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-826-15	PB-826-16	PB-840-01	PB-840-01	PB-840-02	PB-840-03	PB-840-04	PB-840-05
Field Sample ID						DUP-44	PB-826-16-SS01	PB-840-01-SS01	DUP-38	PB-840-02-SS01	PB-840-03-SS01	PB-840-04-SS01	PB-840-05-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						7/14/2022	7/14/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022
Comments						Field Duplicate			Field Duplicate				
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.068 (0.036)	ND (0.00089)	0.006 (0.0008)	ND (0.00057)	0.00021 J (0.00051)	ND (0.00048)	ND (0.00052)	ND (0.00072)	
Cumene	1000	6.1	87	1000	1 (0.071)	ND (0.0018)	0.0092 (0.0016)	ND (0.0011)	0.00034 J (0.001)	0.00015 J (0.00095)	ND (0.001)	ND (0.0014)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.036)	ND (0.00089)	ND (0.0008)	ND (0.00057)	ND (0.00051)	ND (0.00048)	ND (0.00052)	ND (0.00072)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.071)	ND (0.0018)	ND (0.0016)	ND (0.0011)	ND (0.001)	ND (0.00095)	ND (0.001)	ND (0.0014)	
Ethyl Benzene	2300	15	1300	820	0.56 (0.071)	ND (0.0018)	0.00068 J (0.0016)	ND (0.0011)	0.00019 J (0.001)	0.00028 J (0.00095)	ND (0.001)	ND (0.0014)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.14)	ND (0.0036)	ND (0.0032)	ND (0.0023)	ND (0.002)	ND (0.0019)	ND (0.0021)	ND (0.0029)	
Toluene	8000	76	650	9800	0.051 J (0.071)	ND (0.0018)	0.0026 (0.0016)	ND (0.0011)	ND (0.001)	ND (0.00095)	ND (0.001)	ND (0.0014)	
1,2,4-Trimethylbenzene	180	0.92	70	250	<u>15 (0.14)</u>	0.00061 J (0.0036)	0.0014 J (0.0032)	ND (0.0023)	0.0035 (0.002)	ND (0.0019)	ND (0.0021)	ND (0.0029)	
1,3,5-Trimethylbenzene	220	0.92	99	240	<u>4.8 (0.14)</u>	0.00089 J (0.0036)	0.0023 J (0.0032)	ND (0.0023)	0.0059 (0.002)	0.00062 J (0.0019)	ND (0.0021)	0.00047 J (0.0029)	
Xylenes (total)	240	1.5	51	340	<u>29 (0.071)</u>	ND (0.0018)	0.008 J (0.0016)	ND (0.0011)	0.002 (0.001)	ND (0.00095)	ND (0.001)	ND (0.0014)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.1)	ND (0.11)	ND (0.12)	0.092 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	
Benzo(a)anthracene	430	--	3200	--	0.027 J (0.1)	ND (0.11)	0.15 (0.12)	0.44 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.03 J (0.11)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.15)	0.15 J (0.16)	0.4 (0.15)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	
Benzo(b)fluoranthene	430	--	3200	--	0.029 J (0.1)	ND (0.11)	0.18 (0.12)	0.52 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.053 J (0.11)	
Benzo(g,h,i)perylene	4600	--	14000	--	0.027 J (0.14)	ND (0.15)	0.12 J (0.16)	0.18 (0.15)	ND (0.15)	ND (0.15)	ND (0.14)	0.025 J (0.14)	
Chrysene	43000	--	320000	--	0.15 (0.1)	ND (0.11)	0.22 (0.12)	0.43 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.056 J (0.11)	
Fluorene	6200	--	18000	--	0.39 (0.17)	ND (0.19)	ND (0.2)	0.052 J (0.19)	ND (0.18)	ND (0.19)	ND (0.17)	0.023 J (0.18)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	<u>2.7 (0.17)</u>	0.025 J (0.19)	0.046 J (0.2)	0.045 J (0.19)	ND (0.18)	ND (0.19)	ND (0.17)	0.075 J (0.18)	
Phenanthrene	4600	--	14000	--	0.99 (0.1)	ND (0.11)	0.19 (0.12)	0.39 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.073 J (0.11)	
Pyrene	4600	--	14000	--	0.085 J (0.1)	ND (0.11)	0.21 (0.12)	0.53 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.056 J (0.11)	
Metals													
Lead	2520	--	2520	45000	1.7 J (2.11)	6.77 (2.22)	19.2 (4.58)	36.7 (2.2)	4.66 (2.26)	5.92 (2.29)	10.9 (2.02)	103 (2.12)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-840-06	PB-840-07	PB-840-08	PB-840-09	PB-840-09R	PB-840-10	PB-840-11	PB-840-12
Field Sample ID					PB-840-06-SS01	PB-840-07-SS01	PB-840-08-SS01	PB-840-09-SS01	G04-MW-01-10.0-10.5	PB-840-10-SS01	PB-840-11-SS01	PB-840-12-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	10.0 - 10.5	3.0 - 3.5	2.5 - 3.0	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/8/2022	7/8/2022	7/8/2022	7/8/2022	12/20/2022	7/8/2022	7/8/2022	7/8/2022
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	ND (0.00046)	0.023 (0.00056)	0.00069 (0.00055)	<u>4.4 (0.15)</u>	ND (0.00052)	ND (0.00055)	0.0084 (0.00039)	ND (0.00053)
Cumene	1000	6.1	87	1000	0.0016 (0.00093)	0.002 (0.0011)	0.00015 J (0.0011)	<u>15 (0.3)</u>	ND (0.001)	ND (0.0011)	0.0058 (0.00078)	ND (0.0011)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00046)	ND (0.00056)	ND (0.00055)	ND (0.15)	NA	ND (0.00055)	ND (0.00039)	ND (0.00053)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00093)	ND (0.0011)	ND (0.0011)	ND (0.3)	NA	ND (0.0011)	ND (0.00078)	ND (0.0011)
Ethyl Benzene	2300	15	1300	820	0.00058 J (0.00093)	0.016 (0.0011)	ND (0.0011)	<u>66 (0.3)</u>	ND (0.001)	ND (0.0011)	0.0097 (0.00078)	ND (0.0011)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0018)	ND (0.0022)	ND (0.0022)	ND (0.61)	ND (0.0021)	ND (0.0022)	ND (0.0016)	ND (0.0021)
Toluene	8000	76	650	9800	ND (0.00093)	0.00079 J (0.0011)	ND (0.0011)	0.3 (0.3)	NA	ND (0.0011)	ND (0.00078)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0018)	0.019 (0.0022)	ND (0.0022)	<u>92 (1.2)</u>	ND (0.0021)	0.012 (0.0022)	0.072 (0.0016)	ND (0.0021)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0018)	0.0056 (0.0022)	ND (0.0022)	<u>33 (0.61)</u>	ND (0.0021)	0.0038 (0.0022)	0.04 (0.0016)	ND (0.0021)
Xylenes (total)	240	1.5	51	340	ND (0.00093)	0.044 (0.0011)	ND (0.0011)	<u>200 (0.3)</u>	ND (0.001)	0.022 (0.0011)	0.059 (0.00078)	ND (0.0011)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.12)	ND (0.12)	0.16 (0.12)	NA	ND (0.11)	ND (0.12)	ND (0.11)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.12)	ND (0.12)	0.97 (0.12)	NA	ND (0.11)	ND (0.12)	ND (0.11)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.16)	ND (0.16)	0.096 J (0.15)	NA	ND (0.15)	ND (0.16)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.12)	ND (0.12)	0.12 (0.12)	NA	ND (0.11)	ND (0.12)	ND (0.11)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.16)	ND (0.16)	0.072 J (0.15)	NA	ND (0.15)	ND (0.16)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.12)	ND (0.12)	0.22 (0.12)	NA	ND (0.11)	0.041 J (0.12)	ND (0.11)
Fluorene	6200	--	18000	--	ND (0.18)	ND (0.19)	ND (0.2)	1.9 (0.19)	NA	ND (0.19)	0.072 J (0.2)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.18)	ND (0.19)	ND (0.2)	<u>9.3 (1.9)</u>	ND (0.19)	ND (0.19)	0.09 J (0.2)	ND (0.19)
Phenanthrene	4600	--	14000	--	0.049 J (0.11)	ND (0.12)	ND (0.12)	4.8 (0.12)	NA	ND (0.11)	0.18 (0.12)	ND (0.11)
Pyrene	4600	--	14000	--	0.018 J (0.11)	ND (0.12)	ND (0.12)	0.48 (0.12)	NA	ND (0.11)	0.031 J (0.12)	ND (0.11)
Metals												
Lead	2520	--	2520	45000	6.05 (2.2)	4.94 (2.26)	5.75 (2.33)	4.3 (2.27)	9.99 (2.27)	5.38 (2.25)	7.06 (2.36)	5.21 (2.26)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-840-13	PB-840-14	PB-840-15	PB-840-16	PB-841-01	PB-841-02	PB-841-03	PB-841-04
Field Sample ID						PB-840-13-SS01	PB-840-14-SS01	PB-840-15-SS01	PB-840-16-SS01	PB-841-01-SS01	PB-841-02-SS01	PB-841-03-SS01	PB-841-04-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98		ND (0.00059)	ND (0.00054)	ND (0.00055)	ND (0.00044)	ND (0.00064)	ND (0.0006)	ND (0.00054)	ND (0.00039)
Cumene	1000	6.1	87	1000		ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.00078)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2		ND (0.00059)	ND (0.00054)	ND (0.00055)	ND (0.00044)	ND (0.00064)	ND (0.0006)	ND (0.00054)	ND (0.00039)
1,2-Dichloroethane	16	0.11	8.1	33		ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.00078)
Ethyl Benzene	2300	15	1300	820		ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.00078)
Methyl tert-butyl ether	2400	16	390	5900		ND (0.0024)	ND (0.0022)	ND (0.0022)	ND (0.0018)	ND (0.0025)	ND (0.0024)	ND (0.0021)	ND (0.0016)
Toluene	8000	76	650	9800		ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.00078)
1,2,4-Trimethylbenzene	180	0.92	70	250		ND (0.0024)	ND (0.0022)	ND (0.0022)	ND (0.0018)	ND (0.0025)	ND (0.0024)	ND (0.0021)	ND (0.0016)
1,3,5-Trimethylbenzene	220	0.92	99	240		ND (0.0024)	ND (0.0022)	ND (0.0022)	ND (0.0018)	ND (0.0025)	ND (0.0024)	ND (0.0021)	ND (0.0016)
Xylenes (total)	240	1.5	51	340		ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.00078)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--		ND (0.11)	ND (0.11)	0.11 (0.11)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--		ND (0.11)	0.18 (0.11)	0.48 (0.11)	0.12 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--		ND (0.15)	0.18 (0.14)	0.46 (0.14)	0.14 J (0.15)	ND (0.14)	ND (0.14)	ND (0.13)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--		ND (0.11)	0.22 (0.11)	0.57 (0.11)	0.18 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--		ND (0.15)	0.099 J (0.14)	0.22 (0.14)	0.098 J (0.15)	ND (0.14)	ND (0.14)	ND (0.13)	ND (0.14)
Chrysene	43000	--	320000	--		ND (0.11)	0.17 (0.11)	0.44 (0.11)	0.13 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Fluorene	6200	--	18000	--		ND (0.18)	ND (0.18)	0.05 J (0.18)	ND (0.18)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27		ND (0.18)	ND (0.18)	0.091 J (0.18)	ND (0.18)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)
Phenanthrene	4600	--	14000	--		ND (0.11)	0.17 (0.11)	0.41 (0.11)	0.14 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Pyrene	4600	--	14000	--		ND (0.11)	0.28 (0.11)	0.68 (0.11)	0.18 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Metals													
Lead	2520	--	2520	45000		6.78 (2.1)	44.4 (2.09)	49.2 (4.3)	53.1 (2.22)	3.27 (2.07)	3.32 (1.98)	3.07 (2.01)	5.88 (2)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-841-05	PB-841-06	PB-841-07	PB-841-08	PB-841-09	PB-841-09	PB-841-10	PB-841-11
Field Sample ID						PB-841-05-SS01	PB-841-06-SS01	PB-841-07-SS01	PB-841-08-SS01	PB-841-09-SS01	DUP-42	PB-841-10-SS01	PB-841-11-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5	4.5 - 5.0
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022
Comments						Field Duplicate							
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98		ND (0.0006)	ND (0.00059)	ND (0.00087)	ND (0.00065)	ND (0.0014)	ND (0.00059)	ND (0.00061)	ND (0.00069)
Cumene	1000	6.1	87	1000		ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)	ND (0.0012)	ND (0.0014)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2		ND (0.0006)	ND (0.00059)	ND (0.00087)	ND (0.00065)	ND (0.0014)	ND (0.00059)	ND (0.00061)	ND (0.00069)
1,2-Dichloroethane	16	0.11	8.1	33		ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)	ND (0.0012)	ND (0.0014)
Ethyl Benzene	2300	15	1300	820		ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)	ND (0.0012)	ND (0.0014)
Methyl tert-butyl ether	2400	16	390	5900		ND (0.0024)	ND (0.0024)	ND (0.0035)	ND (0.0026)	ND (0.0055)	ND (0.0024)	ND (0.0024)	ND (0.0028)
Toluene	8000	76	650	9800		ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)	ND (0.0012)	ND (0.0014)
1,2,4-Trimethylbenzene	180	0.92	70	250		ND (0.0024)	ND (0.0024)	ND (0.0035)	ND (0.0026)	ND (0.0055)	ND (0.0024)	ND (0.0024)	ND (0.0028)
1,3,5-Trimethylbenzene	220	0.92	99	240		ND (0.0024)	ND (0.0024)	ND (0.0035)	ND (0.0026)	ND (0.0055)	ND (0.0024)	ND (0.0024)	ND (0.0028)
Xylenes (total)	240	1.5	51	340		ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)	ND (0.0012)	ND (0.0014)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--		ND (0.1)	ND (0.11)	ND (0.12)	ND (0.1)	0.062 J (0.11)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--		ND (0.1)	ND (0.11)	ND (0.12)	ND (0.1)	0.22 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--		ND (0.13)	ND (0.15)	ND (0.16)	ND (0.14)	0.23 (0.15)	ND (0.13)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--		ND (0.1)	ND (0.11)	0.037 J (0.12)	ND (0.1)	0.28 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--		ND (0.13)	ND (0.15)	ND (0.16)	ND (0.14)	0.11 J (0.15)	ND (0.13)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--		ND (0.1)	ND (0.11)	ND (0.12)	ND (0.1)	0.22 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)
Fluorene	6200	--	18000	--		ND (0.17)	ND (0.19)	ND (0.21)	ND (0.17)	0.026 J (0.19)	ND (0.17)	ND (0.17)	ND (0.18)
Indeno(1,2,3-cd)pyrene	430	--	3200	--		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27		ND (0.17)	ND (0.19)	ND (0.21)	ND (0.17)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.18)
Phenanthrene	4600	--	14000	--		ND (0.1)	ND (0.11)	0.032 J (0.12)	ND (0.1)	0.2 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)
Pyrene	4600	--	14000	--		ND (0.1)	ND (0.11)	0.038 J (0.12)	ND (0.1)	0.35 (0.11)	ND (0.1)	ND (0.1)	ND (0.1)
Metals													
Lead	2520	--	2520	45000		3.54 (2)	4.07 (2.21)	8.11 (2.48)	5 (2.04)	5 (2.17)	3.6 (2)	2.76 (2.02)	2.51 (2.06)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-841-12	PB-841-13	PB-841-14	PB-843-01	PB-843-02	PB-843-03	PB-843-04	PB-843-05
Field Sample ID					PB-841-12-SS01	PB-841-13-SS01	PB-841-14-SS01	PB-843-01-SS01	PB-843-02-SS01	PB-843-03-SS01	PB-843-04-SS01	PB-843-05-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/12/2022	7/12/2022	7/12/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	0.0002 J (0.00046)	ND (0.00086)	0.00032 J (0.00058)	ND (0.0005)	0.00085 (0.00046)	ND (0.00067)	0.00078 (0.00061)	0.0067 (0.00054)
Cumene	1000	6.1	87	1000	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)	0.00012 J (0.0011)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00046)	ND (0.00086)	ND (0.00058)	ND (0.0005)	ND (0.00046)	ND (0.00067)	ND (0.00061)	ND (0.00054)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)	ND (0.0011)
Ethyl Benzene	2300	15	1300	820	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)	ND (0.0011)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0018)	ND (0.0035)	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.0027)	ND (0.0024)	ND (0.0022)
Toluene	8000	76	650	9800	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0018)	ND (0.0035)	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.0027)	ND (0.0024)	ND (0.0022)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0018)	ND (0.0035)	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.0027)	ND (0.0024)	ND (0.0022)
Xylenes (total)	240	1.5	51	340	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)	ND (0.0011)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.11)	0.088 J (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	0.24 (0.11)	0.035 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	0.22 (0.14)	0.044 J (0.14)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.15)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	0.26 (0.11)	0.061 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	0.14 (0.14)	0.039 J (0.14)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.15)	ND (0.16)
Chrysene	43000	--	320000	--	ND (0.11)	0.21 (0.11)	0.044 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.19)	0.036 J (0.18)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.17)	ND (0.19)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.17)	ND (0.19)	ND (0.19)
Phenanthrene	4600	--	14000	--	ND (0.11)	0.39 (0.11)	0.032 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.11)	0.41 (0.11)	0.054 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Metals												
Lead	2520	--	2520	45000	3.72 (2.24)	93.9 (2.1)	38.9 (2.08)	3.02 (2.08)	3.41 (2.18)	3.06 (2.08)	5.63 (2.26)	6.17 (4.48)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-843-06	PB-843-07	PB-843-08	PB-843-09	PB-843-10	PB-843-11	PB-843-11	PB-843-12	
Field Sample ID					PB-843-06-SS01	PB-843-07-SS01	PB-843-08-SS01	PB-843-09-SS01	PB-843-10-SS01	PB-843-11-SS01	DUP-40	PB-843-12-SS01	
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	4.0 - 4.5	2.0 - 2.5	3.0 - 3.5	4.0 - 4.5	2.0 - 2.5	4.5 - 5.0	4.5 - 5.0	4.0 - 4.5	
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	
Sample Date					7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	
Comments													Field Duplicate
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.0057 (0.00061)	0.00032 J (0.00048)	ND (0.00055)	0.0018 (0.00063)	0.082 (0.00052)	0.00024 J (0.00063)	ND (0.00066)	0.0017 (0.00051)	
Cumene	1000	6.1	87	1000	0.00071 J (0.0012)	0.00016 J (0.00096)	ND (0.0011)	ND (0.0012)	0.00037 J (0.001)	0.00026 J (0.0013)	ND (0.0013)	0.00045 J (0.001)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00061)	ND (0.00048)	ND (0.00055)	ND (0.00063)	ND (0.00052)	ND (0.00063)	ND (0.00066)	ND (0.00051)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0012)	ND (0.00096)	ND (0.0011)	ND (0.0012)	ND (0.001)	ND (0.0013)	ND (0.0013)	ND (0.001)	
Ethyl Benzene	2300	15	1300	820	ND (0.0012)	0.00071 J (0.00096)	ND (0.0011)	ND (0.0012)	ND (0.001)	ND (0.0013)	ND (0.0013)	ND (0.001)	
Methyl tert-butyl ether	2400	16	390	5900	0.00037 J (0.0024)	0.00047 J (0.0019)	ND (0.0022)	ND (0.0025)	0.0012 J (0.0021)	0.00045 J (0.0025)	ND (0.0026)	0.0009 J (0.002)	
Toluene	8000	76	650	9800	ND (0.0012)	0.002 (0.00096)	ND (0.0011)	ND (0.0012)	ND (0.001)	ND (0.0013)	ND (0.0013)	ND (0.001)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0024)	0.0018 J (0.0019)	ND (0.0022)	ND (0.0025)	ND (0.0021)	ND (0.0025)	ND (0.0026)	ND (0.002)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0024)	0.0011 J (0.0019)	ND (0.0022)	ND (0.0025)	ND (0.0021)	ND (0.0025)	ND (0.0026)	ND (0.002)	
Xylenes (total)	240	1.5	51	340	ND (0.0012)	0.0049 (0.00096)	ND (0.0011)	ND (0.0012)	0.007 (0.001)	ND (0.0013)	ND (0.0013)	ND (0.001)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.11)	
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	0.037 J (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	0.022 J (0.12)	ND (0.11)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.15)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	0.033 J (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.11)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.15)	
Chrysene	43000	--	320000	--	ND (0.11)	0.1 J (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.11)	
Fluorene	6200	--	18000	--	ND (0.19)	ND (0.19)	ND (0.18)	ND (0.2)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.18)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.19)	0.038 J (0.19)	ND (0.18)	ND (0.2)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.18)	
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	0.026 J (0.12)	ND (0.11)	
Pyrene	4600	--	14000	--	ND (0.11)	0.14 (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	0.026 J (0.12)	ND (0.11)	
Metals													
Lead	2520	--	2520	45000	6.13 (2.22)	14.2 (2.21)	3.99 (2.03)	18.3 (2.32)	5.3 (2.21)	5.83 (2.25)	18 (4.67)	8.48 (2.15)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-843-13	PB-843-14	PB-843-15	PB-843-16	PB-843-17	PB-847-01	PB-847-02	PB-847-02	
Field Sample ID					PB-843-13-SS01	PB-843-14-SS01	PB-843-15-SS01	PB-843-16-SS01	PB-843-17-SS01	PB-847-01-SS01	PB-847-02-SS01	DUP-37	
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	
Sample Date					7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/8/2022	7/8/2022	7/8/2022	
Comments													Field Duplicate
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00051)	0.00035 J (0.00049)	ND (0.00048)	ND (0.00048)	0.00024 J (0.00057)	ND (0.00043)	ND (0.00046)	ND (0.00044)	
Cumene	1000	6.1	87	1000	ND (0.001)	0.00017 J (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00051)	ND (0.00049)	ND (0.00048)	ND (0.00048)	ND (0.00057)	ND (0.00043)	ND (0.00046)	ND (0.00044)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.001)	ND (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.002)	0.0006 J (0.002)	ND (0.0019)	ND (0.0019)	0.00055 J (0.0023)	ND (0.0017)	ND (0.0018)	ND (0.0018)	
Toluene	8000	76	650	9800	ND (0.001)	ND (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.002)	ND (0.002)	ND (0.0019)	ND (0.0019)	ND (0.0023)	ND (0.0017)	ND (0.0018)	ND (0.0018)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.002)	ND (0.002)	ND (0.0019)	ND (0.0019)	ND (0.0023)	ND (0.0017)	ND (0.0018)	ND (0.0018)	
Xylenes (total)	240	1.5	51	340	ND (0.001)	ND (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.12)	0.05 J (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.12)	0.24 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.15)	0.23 (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.12)	0.27 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.15)	0.12 J (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.12)	0.24 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	
Fluorene	6200	--	18000	--	ND (0.18)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.18)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.12)	0.19 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.12)	0.39 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	
Metals													
Lead	2520	--	2520	45000	3.21 (2.08)	11.2 (2.24)	92 (2.26)	48.6 (4.56)	11 (2.38)	6.08 (2.37)	4.67 (2.42)	4.52 (2.34)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-847-03	PB-847-04	PB-847-05	PB-847-06	PB-847-07	PB-847-08	PB-847-09	PB-847-10
Field Sample ID						PB-847-03-SS01	PB-847-04-SS01	PB-847-05-SS01	PB-847-06-SS01	PB-847-07-SS01	PB-847-08-SS01	PB-847-09-SS01	PB-847-10-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	4.0 - 4.5	3.5 - 4.0	4.0 - 4.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00045)	ND (0.00044)	ND (0.00043)	ND (0.00043)	0.00029 J (0.00052)	ND (0.00045)	0.00024 J (0.00058)	ND (0.00049)	
Cumene	1000	6.1	87	1000	ND (0.00089)	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00045)	ND (0.00044)	ND (0.00043)	ND (0.00043)	ND (0.00052)	ND (0.00045)	ND (0.00058)	ND (0.00049)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00089)	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	
Ethyl Benzene	2300	15	1300	820	ND (0.00089)	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0018)	ND (0.0018)	ND (0.0017)	ND (0.0017)	ND (0.0021)	ND (0.0018)	ND (0.0023)	ND (0.002)	
Toluene	8000	76	650	9800	ND (0.00089)	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0018)	ND (0.0018)	ND (0.0017)	ND (0.0017)	ND (0.0021)	ND (0.0018)	ND (0.0023)	ND (0.002)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0018)	ND (0.0018)	ND (0.0017)	ND (0.0017)	ND (0.0021)	ND (0.0018)	ND (0.0023)	ND (0.002)	
Xylenes (total)	240	1.5	51	340	ND (0.00089)	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.17)	ND (0.16)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.17)	ND (0.16)	
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	
Fluorene	6200	--	18000	--	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.21)	ND (0.2)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.21)	ND (0.2)	
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	
Metals													
Lead	2520	--	2520	45000	4.07 (2.17)	3.69 (2.26)	3.51 (2.23)	4.69 (2.31)	5.3 (4.63)	4.46 (2.36)	4.13 (2.5)	5.37 (4.8)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-847-11	PB-847-12	PB-847-13	PB-847-14	PB-847-15	PB-847-15R	PB-847-15R	PB-847-16
Field Sample ID						PB-847-11-SS01	PB-847-12-SS01	PB-847-13-SS01	PB-847-14-SS01	PB-847-15-SS01	PB-847-15R-6.0-6.5	PB-847-15R-17.0-17.5	PB-847-16-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	4.5 - 5.0	4.0 - 4.5	3.5 - 4.0	4.0 - 4.5	6.0 - 6.5	17.0 - 17.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct	Soil Migration to		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	1/4/2023	1/4/2023	7/8/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.00047 J (0.00049)	ND (0.00043)	0.051 J (0.11)	ND (0.12)	0.063 J (0.12)	ND (0.032)	0.16 (0.026)	ND (0.00047)	
Cumene	1000	6.1	87	1000	0.00012 J (0.00098)	0.013 (0.00087)	0.94 (0.21)	1.3 (0.25)	1.2 (0.23)	3.2 (0.064)	1.1 (0.051)	ND (0.00094)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00049)	ND (0.00043)	ND (0.11)	ND (0.12)	ND (0.12)	NA	NA	ND (0.00047)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00098)	ND (0.00087)	ND (0.21)	ND (0.25)	ND (0.23)	NA	NA	ND (0.00094)	
Ethyl Benzene	2300	15	1300	820	ND (0.00098)	0.0028 (0.00087)	0.2 J (0.21)	ND (0.25)	0.24 (0.23)	5.4 (0.064)	0.018 J (0.051)	ND (0.00094)	
Methyl tert-butyl ether	2400	16	390	5900	0.0035 (0.002)	ND (0.0017)	ND (0.43)	ND (0.5)	ND (0.46)	ND (0.13)	ND (0.1)	ND (0.0019)	
Toluene	8000	76	650	9800	ND (0.00098)	ND (0.00087)	ND (0.21)	ND (0.25)	ND (0.23)	NA	NA	ND (0.00094)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.002)	0.02 (0.0017)	<u>2.2 (0.43)</u>	ND (0.5)	<u>2.8 (0.46)</u>	<u>5.1 (0.13)</u>	ND (0.1)	ND (0.0019)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.002)	0.054 (0.0017)	<u>1.4 (0.43)</u>	ND (0.5)	<u>1.8 (0.46)</u>	<u>3.2 (0.13)</u>	0.016 J (0.1)	ND (0.0019)	
Xylenes (total)	240	1.5	51	340	ND (0.00098)	0.0009 J (0.00087)	0.23 J (0.21)	ND (0.25)	0.27 J (0.23)	<u>2.5 (0.064)</u>	ND (0.051)	ND (0.00094)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	1.7 (1.1)	NA	NA	ND (0.12)	
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (1.1)	NA	NA	ND (0.12)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.16)	ND (1.5)	NA	NA	ND (0.16)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (1.1)	NA	NA	ND (0.12)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.16)	ND (1.5)	NA	NA	ND (0.16)	
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (1.1)	NA	NA	ND (0.12)	
Fluorene	6200	--	18000	--	ND (0.19)	ND (0.19)	0.12 J (0.19)	ND (0.2)	5.3 (1.9)	NA	NA	ND (0.2)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.19)	ND (0.19)	0.13 J (0.19)	0.043 J (0.2)	<u>7 (1.9)</u>	<u>7.5 (0.04)</u>	1.6 (0.038)	ND (0.2)	
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	0.29 (0.12)	ND (0.12)	12 (1.1)	NA	NA	ND (0.12)	
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	0.5 J (1.1)	NA	NA	ND (0.12)	
Metals													
Lead	2520	--	2520	45000	4.97 (4.44)	6.35 (4.54)	3.88 (2.3)	5.24 (4.85)	5.06 (4.52)	6.75 (2.37)	5.9 (2.26)	5.17 (2.4)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-847-17	PB-848-01	PB-848-02	PB-848-03	PB-848-04	PB-848-05	PB-848-05	PB-848-06	
Field Sample ID					PB-847-17-SS01	PB-848-01-SS01	PB-848-02-SS01	PB-848-03-SS01	PB-848-04-SS01	PB-848-05-SS01	DUP-39	PB-848-06-SS01	
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	3.5 - 4.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	
Sample Date					7/8/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	
Comments													Field Duplicate
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.0042 (0.00053)	0.001 (0.00058)	ND (0.00047)	ND (0.00055)	<u>1.8 (0.13)</u>	ND (0.00056)	ND (0.00049)	ND (0.032)	
Cumene	1000	6.1	87	1000	0.027 (0.0011)	0.00014 J (0.0012)	ND (0.00094)	ND (0.0011)	0.46 (0.25)	ND (0.0011)	ND (0.00098)	3 (0.064)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00053)	ND (0.00058)	ND (0.00047)	ND (0.00055)	ND (0.13)	ND (0.00056)	ND (0.00049)	ND (0.032)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.0012)	ND (0.00094)	ND (0.0011)	ND (0.25)	ND (0.0011)	ND (0.00098)	ND (0.064)	
Ethyl Benzene	2300	15	1300	820	0.018 (0.0011)	ND (0.0012)	ND (0.00094)	ND (0.0011)	0.9 (0.25)	ND (0.0011)	ND (0.00098)	1 (0.064)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0021)	ND (0.0023)	ND (0.0019)	ND (0.0022)	ND (0.51)	0.00074 J (0.0022)	0.00057 J (0.002)	ND (0.13)	
Toluene	8000	76	650	9800	0.00073 J (0.0011)	ND (0.0012)	ND (0.00094)	ND (0.0011)	ND (0.25)	ND (0.0011)	ND (0.00098)	ND (0.064)	
1,2,4-Trimethylbenzene	180	0.92	70	250	0.11 (0.0021)	ND (0.0023)	ND (0.0019)	ND (0.0022)	<u>4.3 (0.51)</u>	ND (0.0022)	ND (0.002)	<u>35 (1.3)</u>	
1,3,5-Trimethylbenzene	220	0.92	99	240	0.0088 (0.0021)	0.00026 J (0.0023)	ND (0.0019)	ND (0.0022)	<u>2.7 (0.51)</u>	ND (0.0022)	ND (0.002)	0.16 (0.13)	
Xylenes (total)	240	1.5	51	340	0.017 (0.0011)	0.0016 J (0.0012)	ND (0.00094)	ND (0.0011)	<u>3.8 (0.25)</u>	ND (0.0011)	ND (0.00098)	ND (0.064)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	0.29 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	0.055 J (0.12)	ND (0.12)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	0.048 J (0.16)	ND (0.16)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	0.053 J (0.12)	ND (0.12)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	0.026 J (0.16)	ND (0.16)	
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	0.048 J (0.12)	ND (0.12)	
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.18)	2.3 (0.2)	0.069 J (0.2)	ND (0.2)	0.14 J (0.2)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.18)	<u>1.4 (0.2)</u>	0.034 J (0.2)	ND (0.2)	<u>1.7 (0.2)</u>	
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	1.9 (0.12)	0.054 J (0.12)	0.091 J (0.12)	0.15 (0.12)	
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	0.029 J (0.12)	0.024 J (0.11)	ND (0.12)	ND (0.12)	0.08 J (0.12)	ND (0.12)	
Metals													
Lead	2520	--	2520	45000	5.26 (4.7)	6.75 (2.41)	26.2 (4.38)	51.6 (4.24)	716 (2.44)	8.21 (4.59)	18.8 (2.22)	7.2 (2.39)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-848-07	PB-848-07R	PB-848-08	PB-848-09	PB-848-10	PB-848-11	PB-848-12	PB-848-13
Field Sample ID					PB-848-07-SS01	TG04-MW-02-7.0-7.5	PB-848-08-SS01	PB-848-09-SS01	PB-848-10-SS01	PB-848-11-SS01	PB-848-12-SS01	PB-848-13-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	4.5 - 5.0	7.0 - 7.5	4.5 - 5.0	4.5 - 5.0	4.5 - 5.0	3.0 - 3.5	4.0 - 4.5	4.5 - 5.0
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/11/2022	12/19/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	0.14 (0.034)	0.0023 (0.00056)	0.0003 J (0.00046)	0.00022 J (0.00049)	0.00052 J (0.00063)	<u>0.87 (0.034)</u>	ND (0.00055)	ND (0.036)
Cumene	1000	6.1	87	1000	1.1 (0.067)	0.015 (0.0011)	0.0099 (0.00092)	0.0011 (0.00098)	0.0066 (0.0012)	0.29 (0.068)	ND (0.0011)	0.01 J (0.072)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.034)	NA	ND (0.00046)	ND (0.00049)	ND (0.00063)	ND (0.034)	ND (0.00055)	ND (0.036)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.067)	NA	ND (0.00092)	ND (0.00098)	ND (0.0012)	ND (0.068)	ND (0.0011)	ND (0.072)
Ethyl Benzene	2300	15	1300	820	1.6 (0.067)	0.028 (0.0011)	0.0067 (0.00092)	0.00046 J (0.00098)	0.0024 (0.0012)	0.16 (0.068)	ND (0.0011)	0.018 J (0.072)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.13)	0.00026 J (0.0022)	ND (0.0018)	ND (0.002)	ND (0.0025)	ND (0.14)	ND (0.0022)	ND (0.14)
Toluene	8000	76	650	9800	0.087 (0.067)	NA	ND (0.00092)	ND (0.00098)	ND (0.0012)	0.12 (0.068)	ND (0.0011)	0.039 J (0.072)
1,2,4-Trimethylbenzene	180	0.92	70	250	<u>2.2 (0.13)</u>	0.0016 J (0.0022)	0.037 (0.0018)	0.0013 J (0.002)	0.00081 J (0.0025)	0.12 J (0.14)	ND (0.0022)	ND (0.14)
1,3,5-Trimethylbenzene	220	0.92	99	240	<u>1 (0.13)</u>	0.0059 (0.0022)	0.0047 (0.0018)	0.00028 J (0.002)	0.00047 J (0.0025)	0.076 J (0.14)	ND (0.0022)	ND (0.14)
Xylenes (total)	240	1.5	51	340	0.56 J (0.067)	0.0027 J (0.0011)	0.0013 J (0.00092)	0.00093 J (0.00098)	ND (0.0012)	0.39 J (0.068)	ND (0.0011)	ND (0.072)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.12)	NA	ND (0.12)	ND (0.12)	ND (0.14)	0.081 J (0.11)	0.19 (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	0.025 J (0.12)	NA	ND (0.12)	ND (0.12)	ND (0.14)	0.029 J (0.11)	0.33 (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	0.065 J (0.16)	NA	ND (0.16)	ND (0.16)	ND (0.18)	ND (0.15)	0.3 (0.16)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	0.049 J (0.12)	NA	ND (0.12)	ND (0.12)	ND (0.14)	0.037 J (0.11)	0.36 (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	0.064 J (0.16)	NA	ND (0.16)	ND (0.16)	ND (0.18)	0.039 J (0.15)	0.11 J (0.16)	ND (0.16)
Chrysene	43000	--	320000	--	0.028 J (0.12)	NA	ND (0.12)	ND (0.12)	ND (0.14)	0.034 J (0.11)	0.3 (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	0.089 J (0.2)	NA	ND (0.2)	ND (0.2)	ND (0.23)	0.25 (0.19)	0.13 J (0.21)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.26 (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.23)	ND (0.19)	0.043 J (0.21)	ND (0.2)
Phenanthrene	4600	--	14000	--	0.059 J (0.12)	NA	ND (0.12)	0.034 J (0.12)	ND (0.14)	0.35 (0.11)	0.68 (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.12)	NA	ND (0.12)	ND (0.12)	ND (0.14)	0.058 J (0.11)	0.51 (0.12)	0.022 J (0.12)
Metals												
Lead	2520	--	2520	45000	3200 (4.73)	7.5 (2.25)	246 (4.7)	1140 (2.41)	721 (5.48)	15 (2.24)	282 (2.36)	28.5 (2.46)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-848-14	PB-848-15	PB-848-16	PB-848-17	PB-848-18	PB-881-01	PB-881-02	PB-881-03
Field Sample ID					PB-848-14-SS01	PB-848-15-SS01	PB-848-16-SS01	PB-848-17-SS01	PB-848-18-SS01	PB-881-01-SS01	PB-881-02-SS01	PB-881-03-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	4.5 - 5.0	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/12/2022	7/12/2022	7/12/2022
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	0.00019 J (0.00056)	<u>1.1 (0.028)</u>	ND (0.0006)	ND (0.00077)	0.01 J (0.027)	ND (0.00043)	ND (0.00053)	ND (0.00046)
Cumene	1000	6.1	87	1000	0.00079 J (0.0011)	2.4 (0.055)	ND (0.0012)	ND (0.0015)	0.06 (0.054)	0.0032 (0.00087)	ND (0.001)	ND (0.00093)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00056)	ND (0.028)	ND (0.0006)	ND (0.00077)	ND (0.027)	ND (0.00043)	ND (0.00053)	ND (0.00046)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.055)	ND (0.0012)	ND (0.0015)	ND (0.054)	ND (0.00087)	ND (0.001)	ND (0.00093)
Ethyl Benzene	2300	15	1300	820	0.00017 J (0.0011)	<u>16 (0.055)</u>	ND (0.0012)	ND (0.0015)	0.017 J (0.054)	ND (0.00087)	ND (0.001)	ND (0.00093)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0023)	ND (0.11)	ND (0.0024)	ND (0.0031)	ND (0.11)	ND (0.0017)	ND (0.0021)	ND (0.0019)
Toluene	8000	76	650	9800	ND (0.0011)	0.078 (0.055)	ND (0.0012)	ND (0.0015)	ND (0.054)	ND (0.00087)	ND (0.001)	ND (0.00093)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0023)	<u>7.7 (0.11)</u>	ND (0.0024)	ND (0.0031)	0.058 J (0.11)	ND (0.13)	ND (0.0021)	ND (0.0019)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0023)	<u>4 (0.11)</u>	ND (0.0024)	ND (0.0031)	0.011 J (0.11)	0.091 (0.0017)	ND (0.0021)	ND (0.0019)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	<u>38 J (0.055)</u>	ND (0.0012)	ND (0.0015)	0.056 J (0.054)	0.055 (0.00087)	ND (0.001)	ND (0.00093)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.12)	0.09 J (0.12)	ND (0.12)	ND (0.52)	ND (0.1)	0.097 J (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	4.5 (0.12)	ND (0.12)	ND (0.52)	ND (0.1)	0.04 J (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.16)	ND (0.16)	7.2 (0.16)	ND (0.16)	ND (0.7)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	4.4 (0.12)	ND (0.12)	ND (0.52)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.16)	ND (0.16)	5.2 (0.16)	ND (0.16)	ND (0.7)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	ND (0.12)	4.4 (0.12)	ND (0.12)	0.22 J (0.52)	ND (0.1)	0.2 (0.1)
Fluorene	6200	--	18000	--	ND (0.21)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	0.19 J (0.88)	ND (0.17)	0.51 (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.21)	ND (0.2)	ND (0.2)	0.026 J (0.2)	ND (0.2)	0.26 J (0.88)	ND (0.17)	<u>1.2 (0.17)</u>
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.12)	0.34 (0.12)	ND (0.12)	0.16 J (0.52)	ND (0.1)	1 (0.1)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.12)	0.79 (0.12)	ND (0.12)	0.15 J (0.52)	ND (0.1)	0.15 (0.1)
Metals												
Lead	2520	--	2520	45000	15.7 (2.42)	9.28 (2.29)	6.41 (2.32)	1840 (2.29)	60.7 (11.4)	1.62 J (2)	1.49 J (2.04)	1.78 J (4.15)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-881-04	PB-881-05	PB-881-06	PB-881-07	PB-881-07	PB-881-08	PB-881-09	PB-881-10
Field Sample ID					PB-881-04-SS01	PB-881-05-SS01	PB-881-06-SS01	PB-881-07-SS01	DUP-41	PB-881-08-SS01	PB-881-09-SS01	PB-881-10-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	2.5 - 3.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022
Comments					Field Duplicate							
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	ND (0.00051)	ND (0.00049)	ND (0.00056)	ND (0.021)	ND (0.032)	ND (0.00058)	ND (0.00058)	ND (0.052)
Cumene	1000	6.1	87	1000	ND (0.001)	ND (0.00098)	ND (0.0011)	0.0089 J (0.042)	0.012 J (0.065)	ND (0.0012)	ND (0.0012)	0.26 (0.1)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00051)	ND (0.00049)	ND (0.00056)	ND (0.021)	ND (0.032)	ND (0.00058)	ND (0.00058)	ND (0.052)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.001)	ND (0.00098)	ND (0.0011)	ND (0.042)	ND (0.065)	ND (0.0012)	ND (0.0012)	ND (0.1)
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.00098)	ND (0.0011)	ND (0.042)	ND (0.065)	ND (0.0012)	ND (0.0012)	0.067 J (0.1)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.002)	0.0012 J (0.002)	ND (0.0022)	ND (0.084)	ND (0.13)	ND (0.0023)	ND (0.0023)	ND (0.21)
Toluene	8000	76	650	9800	ND (0.001)	ND (0.00098)	ND (0.0011)	ND (0.042)	ND (0.065)	ND (0.0012)	ND (0.0012)	ND (0.1)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.002)	ND (0.002)	ND (0.0022)	0.47 (0.084)	<u>1 (0.13)</u>	ND (0.0023)	ND (0.0023)	<u>9.4 (0.21)</u>
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.002)	ND (0.002)	ND (0.0022)	0.22 (0.084)	0.45 (0.13)	ND (0.0023)	ND (0.0023)	<u>3.6 (0.21)</u>
Xylenes (total)	240	1.5	51	340	ND (0.001)	ND (0.00098)	ND (0.0011)	0.038 J (0.042)	0.037 J (0.065)	ND (0.0012)	ND (0.0012)	0.46 J (0.1)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	0.047 J (0.11)	ND (0.11)	ND (0.1)	0.04 J (0.1)	0.063 J (0.11)	ND (0.12)	ND (0.12)	ND (0.51)
Benzo(a)anthracene	430	--	3200	--	0.23 (0.11)	ND (0.11)	ND (0.1)	0.022 J (0.1)	0.031 J (0.11)	ND (0.12)	ND (0.12)	0.17 J (0.51)
Benzo(a)pyrene	43	--	7.7	--	0.25 (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.16)	ND (0.69)
Benzo(b)fluoranthene	430	--	3200	--	0.29 (0.11)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.51)
Benzo(g,h,i)perylene	4600	--	14000	--	0.14 J (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.16)	ND (0.69)
Chrysene	43000	--	320000	--	0.22 (0.11)	ND (0.11)	ND (0.1)	0.087 J (0.1)	0.15 (0.11)	ND (0.12)	ND (0.12)	0.34 J (0.51)
Fluorene	6200	--	18000	--	0.018 J (0.19)	ND (0.19)	ND (0.17)	0.23 (0.17)	0.41 (0.18)	ND (0.2)	ND (0.2)	1.1 (0.86)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.048 J (0.19)	ND (0.19)	ND (0.17)	0.048 J (0.17)	<u>0.6 (0.18)</u>	ND (0.2)	ND (0.2)	<u>4.4 (0.86)</u>
Phenanthrene	4600	--	14000	--	0.21 (0.11)	ND (0.11)	ND (0.1)	0.48 (0.1)	0.88 (0.11)	ND (0.12)	ND (0.12)	1.9 (0.51)
Pyrene	4600	--	14000	--	0.28 (0.11)	ND (0.11)	ND (0.1)	0.064 J (0.1)	0.1 J (0.11)	ND (0.12)	ND (0.12)	0.23 J (0.51)
Metals												
Lead	2520	--	2520	45000	89.2 (22.8)	7.7 (2.2)	1.45 J (2.02)	1.48 J (1.98)	1.48 J (2.05)	6.67 (2.43)	6.12 (2.29)	1.22 J (2.04)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-881-11	PB-881-12	PB-881-13	PB-881-14	PB-881-15	PB-881-16	PB-881-17	PB-881-18
Field Sample ID					PB-881-11-SS01	PB-881-12-SS01	PB-881-13-SS01	PB-881-14-SS01	PB-881-15-SS01	PB-881-16-SS01	PB-881-17-SS01	PB-881-18-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	ND (0.00053)	ND (0.00051)	ND (0.00049)	ND (0.00045)	ND (0.00048)	ND (0.00051)	ND (0.0005)	ND (0.00049)
Cumene	1000	6.1	87	1000	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	0.00017 J (0.001)	ND (0.001)	ND (0.00098)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00053)	ND (0.00051)	ND (0.00049)	ND (0.00045)	ND (0.00048)	ND (0.00051)	ND (0.0005)	ND (0.00049)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	ND (0.001)	ND (0.001)	ND (0.00098)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	ND (0.001)	ND (0.001)	ND (0.00098)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0021)	ND (0.002)	ND (0.002)	ND (0.0018)	0.00054 J (0.0019)	ND (0.002)	ND (0.002)	ND (0.002)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	ND (0.001)	ND (0.001)	ND (0.00098)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0021)	ND (0.002)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.002)	ND (0.002)	ND (0.002)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0021)	ND (0.002)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.002)	ND (0.002)	ND (0.002)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	ND (0.001)	ND (0.001)	ND (0.00098)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.16)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.16)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.2)	ND (0.2)	ND (0.18)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.2)	ND (0.2)	ND (0.18)	ND (0.17)
Phenanthrene	4600	--	14000	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.1)
Pyrene	4600	--	14000	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.1)
Metals												
Lead	2520	--	2520	45000	2.35 J (4.14)	1.4 J (2.06)	2.2 J (4.2)	2.02 J (3.98)	5.85 (2.36)	10.7 (4.8)	1.4 J (2.05)	1.46 J (2.05)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-882-01	PB-882-02	PB-882-03	PB-882-04	PB-882-05	PB-882-06	PB-882-07	PB-882-08
Field Sample ID					PB-882-01-SS01	PB-882-02-SS01	PB-882-03-SS01	PB-882-04-SS01	PB-882-05-SS01	PB-882-06-SS01	PB-882-07-SS01	PB-882-08-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/29/2021	7/29/2021	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	ND (0.00052)	ND (0.00047)	ND (0.00045)	0.00058 (0.00048)	ND (0.0005)	ND (0.00045)	ND (0.00046)	ND (0.00045)
Cumene	1000	6.1	87	1000	ND (0.001)	ND (0.00095)	ND (0.0009)	ND (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	0.039 (0.00089)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00052)	ND (0.00047)	ND (0.00045)	ND (0.00048)	ND (0.0005)	ND (0.00045)	ND (0.00046)	ND (0.00045)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.001)	ND (0.00095)	ND (0.0009)	ND (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	ND (0.00089)
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.00095)	ND (0.0009)	0.00014 J (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	0.017 (0.00089)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0021)	ND (0.0019)	ND (0.0018)	ND (0.0019)	ND (0.002)	ND (0.0018)	ND (0.0018)	ND (0.0018)
Toluene	8000	76	650	9800	ND (0.001)	ND (0.00095)	ND (0.0009)	ND (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	ND (0.00089)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0021)	ND (0.0019)	ND (0.0018)	0.00096 J (0.0019)	ND (0.002)	ND (0.0018)	ND (0.0018)	0.041 (0.0018)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0021)	ND (0.0019)	ND (0.0018)	0.00038 J (0.0019)	ND (0.002)	ND (0.0018)	ND (0.0018)	0.016 (0.0018)
Xylenes (total)	240	1.5	51	340	ND (0.001)	ND (0.00095)	ND (0.0009)	0.0006 J (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	0.0045 (0.00089)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	0.041 J (0.12)
Benzo(a)anthracene	430	--	3200	--	0.0014 J (0.0078)	0.00094 J (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.0078)	ND (0.0072)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	0.00078 J (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.0078)	ND (0.0072)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)
Chrysene	43000	--	320000	--	0.00066 J (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.0078)	ND (0.0072)	ND (0.2)	ND (0.19)	ND (0.18)	ND (0.19)	ND (0.19)	0.4 (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.0078)	ND (0.0072)	ND (0.2)	ND (0.19)	ND (0.18)	ND (0.19)	ND (0.19)	<u>1.6 (0.19)</u>
Phenanthrene	4600	--	14000	--	0.00093 J (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	0.78 (0.12)
Pyrene	4600	--	14000	--	0.0014 J (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Metals												
Lead	2520	--	2520	45000	4.2 (2.4)	5.3 (2.3)	9.65 (4.74)	6.1 (4.59)	5.09 (4.5)	5.96 (4.56)	5.62 (4.66)	3.78 J (4.65)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-882-09	PB-882-10	PB-882-11	PB-882-12	PB-882-13	PB-882-14	PB-882-15	PB-882-16
Field Sample ID						PB-882-09-SS01	PB-882-10-SS01	PB-882-11-SS01	PB-882-12-SS01	PB-882-13-SS01	PB-882-14-SS01	PB-882-15-SS01	PB-882-16-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		4.0 - 4.5	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						7/13/2022	7/30/2021	7/13/2022	7/13/2022	7/13/2022	7/30/2021	7/30/2021	7/30/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00054)	ND (0.095)	0.00032 J (0.00043)	0.00037 J (0.00043)	ND (0.00046)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.05)
Cumene	1000	6.1	87	1000	0.042 (0.0011)	1.2 (0.19)	0.0001 J (0.00087)	ND (0.00085)	ND (0.00092)	0.0031 (0.001)	ND (0.001)	ND (0.001)	<u>6.4 (0.1)</u>
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00054)	ND (0.095)	ND (0.00043)	ND (0.00043)	ND (0.00046)	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.05)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.19)	ND (0.00087)	ND (0.00085)	ND (0.00092)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.1)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.19)	ND (0.00087)	ND (0.00085)	ND (0.00092)	ND (0.001)	ND (0.001)	ND (0.001)	<u>17 (0.1)</u>
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	ND (0.38)	0.0016 J (0.0017)	ND (0.0017)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.2)
Toluene	8000	76	650	9800	0.00079 J (0.0011)	ND (0.19)	ND (0.00087)	ND (0.00085)	ND (0.00092)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.1)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	ND (0.38)	ND (0.0017)	ND (0.0017)	ND (0.0018)	0.0077 (0.002)	ND (0.002)	ND (0.002)	<u>64 (1)</u>
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	ND (0.38)	ND (0.0017)	ND (0.0017)	ND (0.0018)	0.005 (0.002)	ND (0.002)	ND (0.002)	<u>18 (0.2)</u>
Xylenes (total)	240	1.5	51	340	0.0014 (0.0011)	ND (0.19)	ND (0.00087)	ND (0.00085)	ND (0.00092)	ND (0.001)	ND (0.001)	ND (0.001)	<u>39 (0.1)</u>
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	0.076 J (0.12)	0.068 (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.016)	0.024 (0.008)	0.024 (0.008)	ND (0.077)
Benzo(a)anthracene	430	--	3200	--	0.024 J (0.12)	0.022 J (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.035 (0.016)	0.03 (0.008)	0.03 (0.008)	0.07 J (0.077)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	0.014 J (0.036)	ND (0.15)	ND (0.15)	ND (0.15)	0.018 (0.016)	0.019 (0.008)	0.019 (0.008)	0.036 J (0.077)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	0.028 J (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.02 (0.016)	0.024 (0.008)	0.024 (0.008)	0.047 J (0.077)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	0.018 J (0.036)	ND (0.15)	ND (0.15)	ND (0.15)	0.0097 J (0.016)	0.0076 J (0.008)	0.0076 J (0.008)	0.035 J (0.077)
Chrysene	43000	--	320000	--	0.094 J (0.12)	0.27 (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.16 (0.016)	0.023 (0.008)	0.023 (0.008)	0.44 (0.077)
Fluorene	6200	--	18000	--	0.99 (0.2)	0.57 (0.036)	ND (0.19)	ND (0.19)	ND (0.19)	0.29 (0.016)	0.015 (0.008)	0.015 (0.008)	0.78 (0.077)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.06 J (0.2)	0.16 (0.036)	ND (0.19)	ND (0.19)	ND (0.19)	0.13 (0.016)	0.0094 (0.008)	0.0094 (0.008)	<u>4.2 (0.077)</u>
Phenanthrene	4600	--	14000	--	1.7 (0.12)	1.4 (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.84 (0.016)	0.079 (0.008)	0.079 (0.008)	2.3 (0.077)
Pyrene	4600	--	14000	--	0.062 J (0.12)	0.083 (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.05 (0.016)	0.047 (0.008)	0.047 (0.008)	0.16 (0.077)
Metals													
Lead	2520	--	2520	45000	4.45 J (4.8)	ND (12)	5.69 (4.61)	7.37 (4.65)	5.83 (4.54)	7 (2.5)	19.4 (2.5)	19.4 (2.5)	11.3 (2.3)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-882-17	PB-882-18	PB-882-19	PB-882-20	PB-883-01	PB-883-02	PB-883-03	PB-883-04
Field Sample ID					PB-882-17-SS01	PB-882-18-SS01	PB-882-19-SS01	PB-882-20-SS01	PB-883-01-SS01	PB-883-02-SS01	PB-883-03-SS01	PB-883-04-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/30/2021	7/30/2021	7/30/2021	7/30/2021	7/14/2022	7/14/2022	7/14/2022	7/14/2022
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	ND (0.00054)	ND (0.00054)	ND (0.00055)	ND (0.00051)	0.00026 J (0.00052)	ND (0.00051)	0.00041 (0.00041)	ND (0.00049)
Cumene	1000	6.1	87	1000	ND (0.0011)	ND (0.0011)	ND (0.0011)	ND (0.001)	0.00018 J (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00054)	ND (0.00054)	ND (0.00055)	ND (0.00051)	ND (0.00052)	ND (0.00051)	ND (0.00041)	ND (0.00049)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	ND (0.0022)	ND (0.0022)	ND (0.002)	0.00032 J (0.0021)	0.0018 J (0.002)	0.002 (0.0016)	ND (0.002)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	ND (0.0022)	ND (0.0022)	ND (0.002)	ND (0.0021)	ND (0.002)	ND (0.0016)	ND (0.002)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	ND (0.0022)	ND (0.0022)	ND (0.002)	ND (0.0021)	ND (0.002)	ND (0.0016)	ND (0.002)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.014)	0.00075 J (0.0079)	ND (0.0082)	ND (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	0.0069 J (0.014)	ND (0.0079)	ND (0.0082)	0.076 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	0.002 J (0.014)	ND (0.0079)	ND (0.0082)	0.04 (0.016)	ND (0.16)	ND (0.16)	ND (0.15)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	0.0048 J (0.014)	ND (0.0079)	ND (0.0082)	0.074 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	0.002 J (0.014)	ND (0.0079)	ND (0.0082)	0.038 (0.016)	ND (0.16)	ND (0.16)	ND (0.15)	ND (0.16)
Chrysene	43000	--	320000	--	0.028 (0.014)	ND (0.0079)	ND (0.0082)	0.42 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)
Fluorene	6200	--	18000	--	0.088 (0.014)	ND (0.0079)	ND (0.0082)	0.46 (0.016)	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.0096 J (0.014)	ND (0.0079)	ND (0.0082)	0.062 (0.016)	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.19)
Phenanthrene	4600	--	14000	--	0.11 (0.014)	0.0041 J (0.0079)	0.0014 J (0.0082)	1.2 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)
Pyrene	4600	--	14000	--	0.0089 J (0.014)	0.002 J (0.0079)	ND (0.0082)	0.14 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)
Metals												
Lead	2520	--	2520	45000	3.9 (2.3)	11.3 (2.4)	10 (2.6)	73.6 (2.5)	7.61 J (11.4)	6.88 (2.35)	5.82 (4.41)	6.16 (4.5)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-883-05	PB-883-06	PB-883-07	PB-883-08	PB-883-09	PB-883-10	PB-883-11	PB-883-12
Field Sample ID						PB-883-05-SS01	PB-883-06-SS01	PB-883-07-SS01	PB-883-08-SS01	PB-883-09-SS01	PB-883-10-SS01	PB-883-11-SS01	PB-883-12-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	3.5 - 4.0	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						7/14/2022	7/14/2022	7/14/2022	12/8/2021	12/8/2021	12/8/2021	12/8/2021	12/8/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.0003 J (0.00045)	ND (0.00053)	0.00026 J (0.00056)	ND (0.00054)	ND (0.0005)	ND (0.00044)	ND (0.00048)	ND (0.00057)	
Cumene	1000	6.1	87	1000	0.0002 J (0.00091)	ND (0.001)	0.00021 J (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00045)	ND (0.00053)	ND (0.00056)	ND (0.00054)	ND (0.0005)	ND (0.00044)	ND (0.00048)	ND (0.00057)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00091)	ND (0.001)	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	
Ethyl Benzene	2300	15	1300	820	ND (0.00091)	ND (0.001)	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	
Methyl tert-butyl ether	2400	16	390	5900	0.0042 (0.0018)	0.00048 J (0.0021)	0.0016 J (0.0023)	ND (0.0022)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.0023)	
Toluene	8000	76	650	9800	ND (0.00091)	ND (0.001)	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	
1,2,4-Trimethylbenzene	180	0.92	70	250	0.00034 J (0.0018)	ND (0.0021)	0.00041 J (0.0023)	ND (0.0022)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.0023)	
1,3,5-Trimethylbenzene	220	0.92	99	240	0.00084 J (0.0018)	ND (0.0021)	0.00025 J (0.0023)	ND (0.0022)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.0023)	
Xylenes (total)	240	1.5	51	340	ND (0.00091)	ND (0.001)	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.12)	
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.12)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.14)	ND (0.15)	ND (0.16)	ND (0.16)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.12)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.14)	ND (0.15)	ND (0.16)	ND (0.16)	
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.12)	
Fluorene	6200	--	18000	--	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.17)	ND (0.18)	ND (0.19)	ND (0.2)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.17)	ND (0.18)	ND (0.19)	ND (0.2)	
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	0.028 J (0.12)	
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	0.021 J (0.12)	
Metals													
Lead	2520	--	2520	45000	6.72 (2.24)	6.14 (2.28)	13.9 (2.29)	12.8 (2.48)	2.18 (2.03)	4.67 (2.14)	4.25 (2.32)	11 (2.27)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-883-13	PB-883-14	PB-883-15	PB-883-16	PB-883-17	PB-883-18	PB-883-19	PB-883-20
Field Sample ID						PB-883-13-SS01	PB-883-14-SS01	PB-883-15-SS01	PB-883-16-SS01	PB-883-17-SS01	PB-883-18-SS01	PB-883-19-SS01	PB-883-20-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						12/8/2021	12/8/2021	7/14/2022	12/8/2021	12/8/2021	12/8/2021	12/8/2021	7/14/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00048)	ND (0.00062)	0.00025 J (0.00048)	ND (0.00056)	ND (0.00064)	ND (0.032)	ND (0.0005)	0.00045 J (0.00048)	
Cumene	1000	6.1	87	1000	ND (0.00096)	ND (0.0012)	ND (0.00095)	0.00019 J (0.0011)	ND (0.0013)	0.82 (0.064)	ND (0.001)	0.00029 J (0.00097)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00048)	ND (0.00062)	ND (0.00048)	ND (0.00056)	ND (0.00064)	ND (0.032)	ND (0.0005)	ND (0.00048)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00096)	ND (0.0012)	ND (0.00095)	ND (0.0011)	ND (0.0013)	ND (0.064)	ND (0.001)	ND (0.00097)	
Ethyl Benzene	2300	15	1300	820	ND (0.00096)	ND (0.0012)	ND (0.00095)	ND (0.0011)	ND (0.0013)	ND (0.064)	ND (0.001)	ND (0.00097)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0019)	ND (0.0025)	0.0018 J (0.0019)	ND (0.0022)	ND (0.0026)	ND (0.13)	ND (0.002)	0.0051 (0.0019)	
Toluene	8000	76	650	9800	ND (0.00096)	ND (0.0012)	ND (0.00095)	ND (0.0011)	ND (0.0013)	ND (0.064)	ND (0.001)	ND (0.00097)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0019)	ND (0.0025)	ND (0.0019)	ND (0.0022)	ND (0.0026)	0.04 J (0.13)	ND (0.002)	0.00089 J (0.0019)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0019)	ND (0.0025)	ND (0.0019)	ND (0.0022)	ND (0.0026)	ND (0.13)	ND (0.002)	0.00048 J (0.0019)	
Xylenes (total)	240	1.5	51	340	ND (0.00096)	ND (0.0012)	0.0003 J (0.00095)	ND (0.0011)	ND (0.0013)	0.044 J (0.064)	ND (0.001)	ND (0.00097)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.59)	ND (0.54)	ND (0.54)	ND (0.1)	ND (0.12)	
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.59)	0.13 J (0.54)	ND (0.54)	ND (0.1)	ND (0.12)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.79)	ND (0.72)	ND (0.72)	ND (0.14)	ND (0.16)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.59)	ND (0.54)	ND (0.54)	ND (0.1)	ND (0.12)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.79)	ND (0.72)	ND (0.72)	ND (0.14)	ND (0.16)	
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	ND (0.12)	0.43 J (0.59)	0.36 J (0.54)	0.37 J (0.54)	0.027 J (0.1)	ND (0.12)	
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.21)	ND (0.2)	ND (0.99)	0.29 J (0.9)	0.25 J (0.91)	ND (0.18)	ND (0.2)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.2)	ND (0.21)	ND (0.2)	ND (0.99)	ND (0.9)	ND (0.91)	ND (0.18)	ND (0.2)	
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.59)	0.43 J (0.54)	0.52 J (0.54)	ND (0.1)	ND (0.12)	
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.12)	0.36 J (0.59)	0.2 J (0.54)	0.19 J (0.54)	ND (0.1)	ND (0.12)	
Metals													
Lead	2520	--	2520	45000	6.72 (2.44)	5.14 (2.35)	8.06 (2.27)	8.62 (2.28)	7.06 (4.2)	6.49 (4.24)	7.75 (4.24)	7.73 (2.28)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-883-21	PB-883-22	PB-883-23	PB-883-24	PB-884-01	PB-884-02	PB-884-03	PB-884-04
Field Sample ID						PB-883-21-SS01	PB-883-22-SS01	PB-883-23-SS01	PB-883-24-SS01	PB-884-01-SS01	PB-884-02-SS01	PB-884-03-SS01	PB-884-04-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						7/14/2022	12/8/2021	12/8/2021	12/8/2021	12/3/2021	12/3/2021	12/3/2021	12/3/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98		ND (0.00046)	ND (0.00052)	ND (0.00074)	ND (0.00051)	0.0003 J (0.00046)	ND (0.00049)	ND (0.00053)	ND (0.00052)
Cumene	1000	6.1	87	1000		0.00042 J (0.00091)	0.00024 J (0.001)	ND (0.0015)	ND (0.001)	0.00072 J (0.00092)	ND (0.00098)	ND (0.001)	0.078 (0.001)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2		ND (0.00046)	ND (0.00052)	ND (0.00074)	ND (0.00051)	ND (0.00046)	ND (0.00049)	ND (0.00053)	ND (0.00052)
1,2-Dichloroethane	16	0.11	8.1	33		ND (0.00091)	ND (0.001)	ND (0.0015)	ND (0.001)	ND (0.00092)	ND (0.00098)	ND (0.001)	ND (0.001)
Ethyl Benzene	2300	15	1300	820		0.00034 J (0.00091)	ND (0.001)	ND (0.0015)	ND (0.001)	0.00023 J (0.00092)	ND (0.00098)	ND (0.001)	ND (0.001)
Methyl tert-butyl ether	2400	16	390	5900		ND (0.0018)	ND (0.0021)	ND (0.003)	ND (0.002)	ND (0.0018)	ND (0.002)	ND (0.0021)	0.0003 J (0.0021)
Toluene	8000	76	650	9800		ND (0.00091)	ND (0.001)	ND (0.0015)	ND (0.001)	0.001 (0.00092)	ND (0.00098)	ND (0.001)	ND (0.001)
1,2,4-Trimethylbenzene	180	0.92	70	250		0.0097 (0.0018)	ND (0.0021)	ND (0.003)	ND (0.002)	0.0024 (0.0018)	ND (0.002)	ND (0.0021)	0.015 (0.0021)
1,3,5-Trimethylbenzene	220	0.92	99	240		0.0032 (0.0018)	ND (0.0021)	ND (0.003)	ND (0.002)	0.00088 J (0.0018)	ND (0.002)	ND (0.0021)	0.0045 (0.0021)
Xylenes (total)	240	1.5	51	340		0.0023 J (0.00091)	ND (0.001)	ND (0.0015)	ND (0.001)	0.0048 (0.00092)	ND (0.00098)	ND (0.001)	0.00073 J (0.001)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--		0.74 (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--		ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	0.053 J (0.12)	ND (0.12)	0.053 J (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--		ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	0.055 J (0.16)	ND (0.16)	ND (0.17)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--		ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	0.077 J (0.12)	ND (0.12)	0.051 J (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--		ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	0.032 J (0.16)	ND (0.16)	ND (0.17)	ND (0.16)
Chrysene	43000	--	320000	--		ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	0.048 J (0.12)	ND (0.12)	0.048 J (0.12)	ND (0.12)
Fluorene	6200	--	18000	--		1.2 (0.18)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.21)	0.35 (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27		<u>3 (0.18)</u>	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.21)	0.073 J (0.2)
Phenanthrene	4600	--	14000	--		3.7 (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	0.033 J (0.12)	0.32 (0.12)
Pyrene	4600	--	14000	--		0.23 (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	0.031 J (0.12)	ND (0.12)	0.055 J (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000		12.6 (10.6)	4.03 (2.25)	4.64 (2.26)	4.46 (2.27)	24.5 (2.28)	5.62 (2.36)	8.8 (2.49)	6.72 (2.43)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-884-05	PB-884-06	PB-884-07	PB-884-08	PB-884-09	PB-884-10	PB-884-11	PB-884-12
Field Sample ID						PB-884-05-SS01	PB-884-06-SS01	PB-884-07-SS01	PB-884-08-SS01	PB-884-09-SS01	PB-884-10-SS01	PB-884-11-SS01	PB-884-12-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.5 - 4.0	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						12/6/2021	12/6/2021	12/6/2021	7/14/2022	7/14/2022	12/6/2021	12/3/2021	12/3/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.0008)	0.0003 J (0.00045)	ND (0.00066)	0.15 (0.033)	<u>2 (0.034)</u>	ND (0.00053)	ND (0.00051)	ND (0.00059)	
Cumene	1000	6.1	87	1000	ND (0.0016)	0.00039 J (0.0009)	ND (0.0013)	0.08 (0.065)	2.8 (0.068)	ND (0.0011)	ND (0.001)	ND (0.0012)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.0008)	ND (0.00045)	ND (0.00066)	ND (0.033)	ND (0.034)	ND (0.00053)	ND (0.00051)	ND (0.00059)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0016)	ND (0.0009)	ND (0.0013)	ND (0.065)	ND (0.068)	ND (0.0011)	ND (0.001)	ND (0.0012)	
Ethyl Benzene	2300	15	1300	820	ND (0.0016)	0.00052 J (0.0009)	ND (0.0013)	0.14 (0.065)	6.6 (0.068)	ND (0.0011)	ND (0.001)	ND (0.0012)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0032)	ND (0.0018)	ND (0.0027)	ND (0.13)	ND (0.14)	ND (0.0021)	ND (0.002)	ND (0.0023)	
Toluene	8000	76	650	9800	ND (0.0016)	0.00069 J (0.0009)	ND (0.0013)	0.082 (0.065)	13 (0.068)	ND (0.0011)	ND (0.001)	ND (0.0012)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0032)	0.0064 (0.0018)	ND (0.0027)	<u>2.1 (0.13)</u>	<u>12 (0.14)</u>	ND (0.0021)	ND (0.002)	ND (0.0023)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0032)	0.0042 (0.0018)	ND (0.0027)	0.66 (0.13)	<u>3.7 (0.14)</u>	ND (0.0021)	ND (0.002)	ND (0.0023)	
Xylenes (total)	240	1.5	51	340	ND (0.0016)	0.0019 J (0.0009)	ND (0.0013)	<u>5.4 (0.065)</u>	<u>41 (0.068)</u>	ND (0.0011)	ND (0.001)	ND (0.0012)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	
Benzo(a)anthracene	430	--	3200	--	ND (0.1)	0.028 J (0.1)	0.03 J (0.1)	0.058 J (0.11)	0.022 J (0.1)	ND (0.1)	0.089 J (0.12)	ND (0.12)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.14)	ND (0.14)	0.055 J (0.15)	ND (0.14)	ND (0.14)	0.074 J (0.16)	ND (0.16)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.1)	ND (0.1)	ND (0.1)	0.08 J (0.11)	ND (0.1)	ND (0.1)	0.095 J (0.12)	ND (0.12)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.14)	ND (0.14)	0.041 J (0.15)	ND (0.14)	ND (0.14)	0.038 J (0.16)	ND (0.16)	
Chrysene	43000	--	320000	--	ND (0.1)	0.027 J (0.1)	0.021 J (0.1)	0.11 (0.11)	0.092 J (0.1)	ND (0.1)	0.087 J (0.12)	ND (0.12)	
Fluorene	6200	--	18000	--	ND (0.17)	ND (0.17)	ND (0.18)	0.25 (0.19)	0.25 (0.17)	ND (0.17)	ND (0.21)	ND (0.2)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.17)	ND (0.17)	ND (0.18)	<u>0.84 (0.19)</u>	<u>3.2 (0.17)</u>	ND (0.17)	0.068 J (0.21)	ND (0.2)	
Phenanthrene	4600	--	14000	--	ND (0.1)	0.065 J (0.1)	ND (0.1)	0.45 (0.11)	0.7 (0.1)	ND (0.1)	0.065 J (0.12)	ND (0.12)	
Pyrene	4600	--	14000	--	ND (0.1)	0.039 J (0.1)	0.043 J (0.1)	0.13 (0.11)	0.056 J (0.1)	ND (0.1)	0.091 J (0.12)	ND (0.12)	
Metals													
Lead	2520	--	2520	45000	2.38 (2.03)	89 (9.96)	2.61 (2.04)	60.2 (4.36)	1.95 J (1.99)	2.58 (1.99)	37 (2.43)	5.65 (2.4)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-884-12	PB-884-13	PB-884-14	PB-884-15	PB-884-16	PB-884-17	PB-884-18	PB-884-19
Field Sample ID						DUP-22	PB-884-13-SS01	PB-884-14-SS01	PB-884-15-SS01	PB-884-16-SS01	PB-884-17-SS01	PB-884-18-SS01	PB-884-19-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						12/3/2021	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022
Comments						Field Duplicate							
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98		ND (0.00054)	ND (0.00052)	ND (0.00054)	<u>2.6 (0.029)</u>	ND (0.0009)	ND (0.00058)	0.035 (0.00055)	0.00036 J (0.00057)
Cumene	1000	6.1	87	1000		ND (0.0011)	ND (0.001)	ND (0.0011)	3.6 (0.059)	ND (0.0018)	ND (0.0012)	0.0053 (0.0011)	0.0044 (0.0011)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2		ND (0.00054)	ND (0.00052)	ND (0.00054)	ND (0.029)	ND (0.0009)	ND (0.00058)	ND (0.00055)	ND (0.00057)
1,2-Dichloroethane	16	0.11	8.1	33		ND (0.0011)	ND (0.001)	ND (0.0011)	ND (0.059)	ND (0.0018)	ND (0.0012)	ND (0.0011)	ND (0.0011)
Ethyl Benzene	2300	15	1300	820		ND (0.0011)	ND (0.001)	ND (0.0011)	8.8 (0.059)	ND (0.0018)	ND (0.0012)	0.024 (0.0011)	0.0024 (0.0011)
Methyl tert-butyl ether	2400	16	390	5900		ND (0.0021)	ND (0.0021)	ND (0.0022)	ND (0.12)	ND (0.0036)	ND (0.0023)	0.00054 J (0.0022)	ND (0.0023)
Toluene	8000	76	650	9800		ND (0.0011)	ND (0.001)	ND (0.0011)	9 (0.059)	ND (0.0018)	ND (0.0012)	ND (0.0011)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250		ND (0.0021)	ND (0.0021)	ND (0.0022)	<u>14 (0.12)</u>	ND (0.0036)	ND (0.0023)	0.033 (0.0022)	0.052 (0.0023)
1,3,5-Trimethylbenzene	220	0.92	99	240		ND (0.0021)	ND (0.0021)	ND (0.0022)	<u>4.5 (0.12)</u>	ND (0.0036)	ND (0.0023)	0.01 (0.0022)	0.022 (0.0023)
Xylenes (total)	240	1.5	51	340		ND (0.0011)	ND (0.001)	ND (0.0011)	<u>47 (0.059)</u>	ND (0.0018)	ND (0.0012)	0.028 (0.0011)	0.05 (0.0011)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--		ND (0.12)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--		ND (0.12)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--		ND (0.16)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--		ND (0.12)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--		ND (0.16)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.14)
Chrysene	43000	--	320000	--		ND (0.12)	ND (0.11)	ND (0.1)	0.059 J (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Fluorene	6200	--	18000	--		ND (0.2)	ND (0.19)	ND (0.17)	0.13 J (0.17)	ND (0.17)	ND (0.18)	ND (0.2)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27		ND (0.2)	ND (0.19)	ND (0.17)	<u>0.85 (0.17)</u>	ND (0.17)	ND (0.18)	0.05 J (0.2)	0.085 J (0.17)
Phenanthrene	4600	--	14000	--		ND (0.12)	ND (0.11)	ND (0.1)	0.45 (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	0.04 J (0.1)
Pyrene	4600	--	14000	--		ND (0.12)	ND (0.11)	ND (0.1)	0.036 J (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Metals													
Lead	2520	--	2520	45000		54.3 (2.37)	3.2 (2.13)	2.63 (1.99)	1.68 J (2.02)	1.86 J (2)	1.99 J (2.01)	7.17 (4.64)	1.61 J (2.08)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-884-20	PB-884-21	PB-884-22	PB-884-23	PB-884-24	PB-884-25	PB-884-26	PB-884-27
Field Sample ID						PB-884-20-SS01	PB-884-21-SS01	PB-884-22-SS01	PB-884-23-SS01	PB-884-24-SS01	PB-884-25-SS01	PB-884-26-SS01	PB-884-27-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						7/14/2022	7/14/2022	12/6/2021	7/14/2022	7/15/2022	7/15/2022	12/6/2021	12/3/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00055)	ND (0.00047)	ND (0.00066)	ND (0.0005)	0.034 (0.00063)	<u>7.1 (0.027)</u>	ND (0.0006)	ND (0.00025)	
Cumene	1000	6.1	87	1000	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	0.03 (0.0013)	3 (0.054)	ND (0.0012)	ND (0.0005)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00055)	ND (0.00047)	ND (0.00066)	ND (0.0005)	ND (0.00063)	ND (0.027)	ND (0.0006)	ND (0.00025)	
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	ND (0.0013)	ND (0.054)	ND (0.0012)	ND (0.0005)	
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	0.095 (0.0013)	9.4 (0.054)	ND (0.0012)	ND (0.0005)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	ND (0.0019)	ND (0.0026)	ND (0.002)	ND (0.0025)	ND (0.11)	ND (0.0024)	ND (0.001)	
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	ND (0.0013)	15 (0.11)	ND (0.0012)	ND (0.0005)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	ND (0.0019)	ND (0.0026)	ND (0.002)	0.13 (0.0025)	<u>12 (0.11)</u>	ND (0.0024)	ND (0.001)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	ND (0.0019)	ND (0.0026)	ND (0.002)	0.042 (0.0025)	<u>3.8 (0.11)</u>	ND (0.0024)	ND (0.001)	
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	0.36 (0.0013)	<u>41 (0.054)</u>	ND (0.0012)	ND (0.0005)	
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.12)	0.035 J (0.11)	ND (0.12)	ND (0.12)	
Benzo(a)anthracene	430	--	3200	--	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.048 J (0.12)	0.022 J (0.11)	ND (0.12)	ND (0.12)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.14)	ND (0.16)	ND (0.16)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.046 J (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.14)	ND (0.16)	ND (0.16)	
Chrysene	43000	--	320000	--	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.04 J (0.12)	0.084 J (0.11)	ND (0.12)	ND (0.12)	
Fluorene	6200	--	18000	--	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.17)	ND (0.2)	0.31 (0.18)	ND (0.19)	ND (0.2)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.17)	0.082 J (0.2)	<u>2.1 (0.18)</u>	ND (0.19)	ND (0.2)	
Phenanthrene	4600	--	14000	--	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.042 J (0.12)	0.53 (0.11)	ND (0.12)	ND (0.12)	
Pyrene	4600	--	14000	--	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.051 J (0.12)	0.048 J (0.11)	0.025 J (0.12)	ND (0.12)	
Metals													
Lead	2520	--	2520	45000	1.04 J (2.06)	1.98 J (2.05)	2.77 (2.16)	1.61 J (2.08)	45.9 (11.7)	3.11 (2.13)	26.5 (2.31)	11.5 (2.41)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-884-28	PB-884-29	PB-885-01	PB-885-02	PB-885-03	PB-885-04	PB-885-05	PB-885-06
Field Sample ID						PB-884-28-SS01	PB-884-29-SS01	PB-885-01-SS01	PB-885-02-SS01	PB-885-03-SS01	PB-885-04-SS01	PB-885-05-SS01	PB-885-06-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						12/3/2021	12/3/2021	12/6/2021	12/6/2021	12/6/2021	7/14/2022	7/14/2022	12/7/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98		ND (0.00048)	ND (0.00045)	ND (0.00051)	ND (0.0005)	ND (0.00054)	ND (0.00046)	ND (0.00047)	ND (0.00056)
Cumene	1000	6.1	87	1000		ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2		ND (0.00048)	ND (0.00045)	ND (0.00051)	ND (0.0005)	ND (0.00054)	ND (0.00046)	ND (0.00047)	ND (0.00056)
1,2-Dichloroethane	16	0.11	8.1	33		ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
Ethyl Benzene	2300	15	1300	820		ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
Methyl tert-butyl ether	2400	16	390	5900		ND (0.0019)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0022)	ND (0.0018)	ND (0.0019)	ND (0.0022)
Toluene	8000	76	650	9800		ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250		ND (0.0019)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0022)	ND (0.0018)	ND (0.0019)	ND (0.0022)
1,3,5-Trimethylbenzene	220	0.92	99	240		ND (0.0019)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0022)	ND (0.0018)	ND (0.0019)	ND (0.0022)
Xylenes (total)	240	1.5	51	340		ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--		ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Benzo(a)anthracene	430	--	3200	--		0.042 J (0.12)	ND (0.12)	ND (0.11)	0.031 J (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Benzo(a)pyrene	43	--	7.7	--		ND (0.16)	ND (0.16)	ND (0.15)	0.054 J (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--		0.039 J (0.12)	ND (0.12)	ND (0.11)	0.075 J (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Benzo(g,h,i)perylene	4600	--	14000	--		ND (0.16)	ND (0.16)	ND (0.15)	0.048 J (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--		0.038 J (0.12)	ND (0.12)	ND (0.11)	0.036 J (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Fluorene	6200	--	18000	--		ND (0.2)	ND (0.21)	ND (0.19)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)
Indeno(1,2,3-cd)pyrene	430	--	3200	--		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27		ND (0.2)	ND (0.21)	ND (0.19)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)
Phenanthrene	4600	--	14000	--		0.045 J (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Pyrene	4600	--	14000	--		0.06 J (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Metals													
Lead	2520	--	2520	45000		9.37 (2.39)	4.49 (2.47)	150 (11.1)	43.9 (11.3)	2.68 (2.05)	1.56 J (2)	1.39 J (1.97)	2.41 (2.07)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-885-07	PB-885-08	PB-885-09	PB-885-10	PB-885-11	PB-885-12	PB-885-13	PB-885-14
Field Sample ID						PB-885-07-SS01	PB-885-08-SS01	PB-885-09-SS01	PB-885-10-SS01	PB-885-11-SS01	PB-885-12-SS01	PB-885-13-SS01	PB-885-14-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						12/6/2021	12/6/2021	12/6/2021	12/6/2021	12/6/2021	7/14/2022	7/14/2022	7/14/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98		ND (0.00056)	ND (0.00042)	ND (0.0005)	ND (0.00058)	ND (0.00053)	ND (0.00043)	ND (0.00048)	ND (0.00042)
Cumene	1000	6.1	87	1000		ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2		ND (0.00056)	ND (0.00042)	ND (0.0005)	ND (0.00058)	ND (0.00053)	ND (0.00043)	ND (0.00048)	ND (0.00042)
1,2-Dichloroethane	16	0.11	8.1	33		ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)
Ethyl Benzene	2300	15	1300	820		ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)
Methyl tert-butyl ether	2400	16	390	5900		ND (0.0022)	ND (0.0017)	ND (0.002)	ND (0.0023)	ND (0.0021)	ND (0.0017)	ND (0.0019)	ND (0.0017)
Toluene	8000	76	650	9800		ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)
1,2,4-Trimethylbenzene	180	0.92	70	250		ND (0.0022)	ND (0.0017)	ND (0.002)	ND (0.0023)	ND (0.0021)	ND (0.0017)	ND (0.0019)	ND (0.0017)
1,3,5-Trimethylbenzene	220	0.92	99	240		ND (0.0022)	ND (0.0017)	ND (0.002)	ND (0.0023)	ND (0.0021)	ND (0.0017)	ND (0.0019)	ND (0.0017)
Xylenes (total)	240	1.5	51	340		ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--		ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--		ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--		ND (0.15)	ND (0.28)	ND (0.16)	ND (0.14)	ND (0.17)	ND (0.14)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--		ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--		ND (0.15)	ND (0.28)	ND (0.16)	ND (0.14)	ND (0.17)	ND (0.14)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--		ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)
Fluorene	6200	--	18000	--		ND (0.18)	ND (0.35)	ND (0.2)	ND (0.18)	ND (0.21)	ND (0.17)	ND (0.17)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27		ND (0.18)	ND (0.35)	ND (0.2)	ND (0.18)	ND (0.21)	ND (0.17)	ND (0.17)	ND (0.17)
Phenanthrene	4600	--	14000	--		ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)
Pyrene	4600	--	14000	--		ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)
Metals													
Lead	2520	--	2520	45000		17.4 (2.15)	9.07 (2.01)	7.61 (2.39)	3.04 (2.03)	6.43 (2.5)	1.33 J (1.97)	1.72 J (1.99)	1.45 J (1.95)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-885-15	PB-885-16	PB-885-17	PB-885-17	PB-885-18	PB-885-19	PB-885-20	PB-885-21
Field Sample ID					PB-885-15-SS01	PB-885-16-SS01	PB-885-17-SS01	DUP-45	PB-885-18-SS01	PB-885-19-SS01	PB-885-20-SS01	PB-885-21-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/14/2022	12/6/2021	7/15/2022	7/15/2022	7/15/2022	7/15/2022	7/14/2022	12/7/2021
Comments					Field Duplicate							
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	ND (0.00045)	ND (0.00056)	ND (0.00041)	ND (0.00046)	ND (0.00045)	ND (0.00044)	ND (0.00049)	ND (0.00056)
Cumene	1000	6.1	87	1000	ND (0.0009)	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00045)	ND (0.00056)	ND (0.00041)	ND (0.00046)	ND (0.00045)	ND (0.00044)	ND (0.00049)	ND (0.00056)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0009)	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)
Ethyl Benzene	2300	15	1300	820	ND (0.0009)	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0018)	ND (0.0022)	ND (0.0016)	ND (0.0018)	ND (0.0018)	ND (0.0017)	ND (0.002)	ND (0.0022)
Toluene	8000	76	650	9800	ND (0.0009)	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0018)	ND (0.0022)	ND (0.0016)	ND (0.0018)	ND (0.0018)	ND (0.0017)	ND (0.002)	ND (0.0022)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0018)	ND (0.0022)	ND (0.0016)	ND (0.0018)	ND (0.0018)	ND (0.0017)	ND (0.002)	ND (0.0022)
Xylenes (total)	240	1.5	51	340	ND (0.0009)	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.1)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.1)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.1)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.1)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.17)	ND (0.2)	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.17)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.17)	ND (0.2)	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.17)	ND (0.17)
Phenanthrene	4600	--	14000	--	ND (0.1)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Pyrene	4600	--	14000	--	ND (0.1)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)
Metals												
Lead	2520	--	2520	45000	1.48 J (1.98)	8.76 J (11.4)	1.53 J (2.21)	2.24 (2.16)	1.49 J (2.06)	1.93 J (2.13)	1.63 J (1.97)	3.11 (2.06)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-885-22	PB-885-23	PB-885-23	PB-885-24	PB-885-25	PB-885-26	PB-886-01	PB-886-02
Field Sample ID						PB-885-22-SS01	PB-885-23-SS01	DUP-23	PB-885-24-SS01	PB-885-25-SS01	PB-885-26-SS01	PB-886-01-SS01	PB-886-02-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						12/7/2021	12/7/2021	12/7/2021	7/15/2022	7/14/2022	12/7/2021	10/7/2021	10/7/2021
Comments						Field Duplicate							
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98		ND (0.0005)	ND (0.00058)	ND (0.034)	ND (0.00058)	ND (0.00042)	ND (0.0006)	ND (0.00048)	ND (0.00046)
Cumene	1000	6.1	87	1000		ND (0.001)	ND (0.0012)	2 (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2		ND (0.0005)	ND (0.00058)	ND (0.034)	ND (0.00058)	ND (0.00042)	ND (0.0006)	ND (0.00048)	ND (0.00046)
1,2-Dichloroethane	16	0.11	8.1	33		ND (0.001)	ND (0.0012)	ND (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)
Ethyl Benzene	2300	15	1300	820		ND (0.001)	ND (0.0012)	0.016 J (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)
Methyl tert-butyl ether	2400	16	390	5900		ND (0.002)	ND (0.0023)	ND (0.13)	ND (0.0023)	ND (0.0017)	ND (0.0024)	ND (0.0019)	ND (0.0018)
Toluene	8000	76	650	9800		ND (0.001)	ND (0.0012)	ND (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)
1,2,4-Trimethylbenzene	180	0.92	70	250		ND (0.002)	ND (0.0023)	0.054 J (0.13)	ND (0.0023)	ND (0.0017)	ND (0.0024)	ND (0.0019)	ND (0.0018)
1,3,5-Trimethylbenzene	220	0.92	99	240		ND (0.002)	ND (0.0023)	ND (0.13)	ND (0.0023)	ND (0.0017)	ND (0.0024)	ND (0.0019)	ND (0.0018)
Xylenes (total)	240	1.5	51	340		ND (0.001)	ND (0.0012)	0.036 J (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--		ND (0.12)	ND (0.1)	3.7 (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--		ND (0.12)	ND (0.1)	ND (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--		ND (0.16)	ND (0.14)	ND (3.2)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.15)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--		ND (0.12)	ND (0.1)	ND (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--		ND (0.16)	ND (0.14)	ND (3.2)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.15)	ND (0.16)
Chrysene	43000	--	320000	--		ND (0.12)	ND (0.1)	ND (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--		ND (0.2)	ND (0.17)	14 (4)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.19)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27		ND (0.2)	ND (0.17)	ND (4)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.19)	ND (0.2)
Phenanthrene	4600	--	14000	--		ND (0.12)	ND (0.1)	29 (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)
Pyrene	4600	--	14000	--		ND (0.12)	ND (0.1)	2.9 (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000		4.76 (4.73)	2.8 (2.08)	6.69 (2.29)	1.63 J (2.16)	1.5 J (1.97)	2.28 (2.05)	6.35 (4.55)	5.8 (4.64)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-886-03	PB-886-04	PB-886-05	PB-886-06	PB-886-07	PB-886-08	PB-886-09	PB-886-09
Field Sample ID						PB-886-03-SS01	PB-886-04-SS01	PB-886-05-SS01	PB-886-06-SS01	PB-886-07-SS01	PB-886-08-SS01	PB-886-09-SS01	DUP-21
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date						10/7/2021	10/7/2021	10/7/2021	7/15/2022	7/15/2022	10/7/2021	10/7/2021	10/7/2021
Comments													Field Duplicate
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98		ND (0.00051)	ND (0.0005)	ND (0.00042)	ND (0.00054)	ND (0.0012)	ND (0.038)	ND (0.00045)	ND (0.00063)
Cumene	1000	6.1	87	1000		ND (0.001)	0.00018 J (0.001)	ND (0.00084)	ND (0.0011)	ND (0.0024)	0.015 J (0.075)	ND (0.0009)	0.00098 J (0.0013)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2		ND (0.00051)	ND (0.0005)	ND (0.00042)	ND (0.00054)	ND (0.0012)	ND (0.038)	ND (0.00045)	ND (0.00063)
1,2-Dichloroethane	16	0.11	8.1	33		ND (0.001)	ND (0.001)	ND (0.00084)	ND (0.0011)	ND (0.0024)	ND (0.075)	ND (0.0009)	ND (0.0013)
Ethyl Benzene	2300	15	1300	820		ND (0.001)	0.00014 J (0.001)	ND (0.00084)	ND (0.0011)	ND (0.0024)	ND (0.075)	ND (0.0009)	0.00033 J (0.0013)
Methyl tert-butyl ether	2400	16	390	5900		ND (0.002)	ND (0.002)	ND (0.0017)	ND (0.0021)	ND (0.0047)	ND (0.15)	ND (0.0018)	ND (0.0025)
Toluene	8000	76	650	9800		ND (0.001)	ND (0.001)	ND (0.00084)	ND (0.0011)	ND (0.0024)	ND (0.075)	ND (0.0009)	ND (0.0013)
1,2,4-Trimethylbenzene	180	0.92	70	250		ND (0.002)	ND (0.002)	ND (0.0017)	ND (0.0021)	ND (0.0047)	ND (0.15)	ND (0.0018)	0.025 (0.0025)
1,3,5-Trimethylbenzene	220	0.92	99	240		ND (0.002)	ND (0.002)	ND (0.0017)	ND (0.0021)	ND (0.0047)	ND (0.15)	ND (0.0018)	0.024 (0.0025)
Xylenes (total)	240	1.5	51	340		ND (0.001)	ND (0.001)	ND (0.00084)	ND (0.0011)	ND (0.0024)	ND (0.075)	ND (0.0009)	0.0021 J (0.0013)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--		ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.11)	0.32 (0.1)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--		ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--		ND (0.16)	ND (0.16)	ND (0.14)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--		ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--		ND (0.16)	ND (0.16)	ND (0.14)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--		ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)
Fluorene	6200	--	18000	--		ND (0.2)	ND (0.19)	ND (0.18)	ND (0.19)	ND (0.19)	0.88 (0.18)	ND (0.18)	ND (0.18)
Indeno(1,2,3-cd)pyrene	430	--	3200	--		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27		ND (0.2)	ND (0.19)	ND (0.18)	ND (0.19)	ND (0.19)	0.062 J (0.18)	ND (0.18)	ND (0.18)
Phenanthrene	4600	--	14000	--		ND (0.12)	0.043 J (0.12)	ND (0.1)	ND (0.11)	ND (0.11)	1.7 (0.1)	ND (0.1)	ND (0.1)
Pyrene	4600	--	14000	--		ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.11)	0.1 (0.1)	ND (0.1)	ND (0.1)
Metals													
Lead	2520	--	2520	45000		6.5 (4.81)	8.09 (4.65)	2.94 J (4.12)	2.26 (2.2)	2.62 (2.23)	81.9 (2.1)	1.76 J (2.1)	1.87 J (2.09)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						PB-886-10	PB-886-11	PB-886-12	PB-886-13	PB-886-14	PB-886-14	PB-886-15	PB-886-16	
Field Sample ID						PB-886-10-SS01	PB-886-11-SS01	PB-886-12-SS01	PB-886-13-SS01	PB-886-14-SS01	DUP-46	PB-886-15-SS01	PB-886-16-SS01	
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to		3.0 - 3.5	3.5 - 4.0	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	
Sample Date						7/15/2022	10/7/2021	10/7/2021	7/15/2022	7/15/2022	7/15/2022	7/15/2022	7/15/2022	
Comments														Field Duplicate
Volatile Organic Compounds														
Benzene	63	0.46	8.7	98		ND (0.0006)	ND (0.00059)	ND (0.00072)	ND (0.0011)	ND (0.00061)	ND (0.00083)	ND (0.00087)	ND (0.00043)	
Cumene	1000	6.1	87	1000		ND (0.0012)	ND (0.0012)	ND (0.0014)	ND (0.0021)	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	
1,2-Dibromoethane	1.2	0.0071	1.8	3.2		ND (0.0006)	ND (0.00059)	ND (0.00072)	ND (0.0011)	ND (0.00061)	ND (0.00083)	ND (0.00087)	ND (0.00043)	
1,2-Dichloroethane	16	0.11	8.1	33		ND (0.0012)	ND (0.0012)	ND (0.0014)	ND (0.0021)	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	
Ethyl Benzene	2300	15	1300	820		ND (0.0012)	ND (0.0012)	ND (0.0014)	ND (0.0021)	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	
Methyl tert-butyl ether	2400	16	390	5900		ND (0.0024)	ND (0.0024)	ND (0.0029)	ND (0.0043)	ND (0.0024)	ND (0.0033)	ND (0.0035)	ND (0.0017)	
Toluene	8000	76	650	9800		ND (0.0012)	ND (0.0012)	ND (0.0014)	ND (0.0021)	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	
1,2,4-Trimethylbenzene	180	0.92	70	250		0.00084 J (0.0024)	ND (0.0024)	0.0011 J (0.0029)	ND (0.0043)	ND (0.0024)	ND (0.0033)	ND (0.0035)	ND (0.0017)	
1,3,5-Trimethylbenzene	220	0.92	99	240		0.0014 J (0.0024)	ND (0.0024)	0.0014 J (0.0029)	ND (0.0043)	ND (0.0024)	ND (0.0033)	ND (0.0035)	ND (0.0017)	
Xylenes (total)	240	1.5	51	340		0.00053 J (0.0012)	ND (0.0012)	0.00049 J (0.0014)	ND (0.0021)	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	
Semivolatile Organic Compounds														
Anthracene	46000	--	46000	--		0.16 (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	
Benzo(a)anthracene	430	--	3200	--		ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	
Benzo(a)pyrene	43	--	7.7	--		ND (0.14)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.14)	
Benzo(b)fluoranthene	430	--	3200	--		ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	
Benzo(g,h,i)perylene	4600	--	14000	--		ND (0.14)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.14)	
Chrysene	43000	--	320000	--		ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	
Fluorene	6200	--	18000	--		0.35 (0.18)	ND (0.18)	0.044 J (0.19)	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.18)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--		NA	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27		0.041 J (0.18)	ND (0.18)	ND (0.19)	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.18)	
Phenanthrene	4600	--	14000	--		0.78 (0.11)	ND (0.11)	0.12 (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	
Pyrene	4600	--	14000	--		0.049 J (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	
Metals														
Lead	2520	--	2520	45000		1.97 J (2.11)	11.7 (2.14)	5.66 (4.58)	3.04 (2.26)	2.16 J (2.18)	2.04 J (2.14)	2.56 (2.2)	1.82 J (2.13)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-886-17	PB-886-18	PB-886-19	PB-886-20	PB-886-21	PB-886-22	PB-886-23	PB-886-24
Field Sample ID					PB-886-17-SS01	PB-886-18-SS01	PB-886-19-SS01	PB-886-20-SS01	PB-886-21-SS01	PB-886-22-SS01	PB-886-23-SS01	PB-886-24-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/15/2022	10/7/2021	7/15/2022	7/15/2022	7/15/2022	7/15/2022	7/15/2022	10/7/2021
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	ND (0.00052)	ND (0.00057)	ND (0.00066)	ND (0.00063)	ND (0.00044)	ND (0.0005)	ND (0.0005)	ND (0.00053)
Cumene	1000	6.1	87	1000	0.00012 J (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)	ND (0.001)	ND (0.001)	ND (0.001)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00052)	ND (0.00057)	ND (0.00066)	ND (0.00063)	ND (0.00044)	ND (0.0005)	ND (0.0005)	ND (0.00053)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)	ND (0.001)	ND (0.001)	ND (0.001)
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)	ND (0.001)	ND (0.001)	ND (0.001)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0021)	ND (0.0023)	ND (0.0026)	ND (0.0025)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0021)
Toluene	8000	76	650	9800	ND (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)	ND (0.001)	ND (0.001)	ND (0.001)
1,2,4-Trimethylbenzene	180	0.92	70	250	0.0025 (0.0021)	ND (0.0023)	ND (0.0026)	ND (0.0025)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0021)
1,3,5-Trimethylbenzene	220	0.92	99	240	0.00082 J (0.0021)	ND (0.0023)	ND (0.0026)	ND (0.0025)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0021)
Xylenes (total)	240	1.5	51	340	ND (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)	ND (0.001)	ND (0.001)	ND (0.001)
Semivolatile Organic Compounds												
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	0.022 J (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	0.036 J (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	0.027 J (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.16)
Chrysene	43000	--	320000	--	ND (0.12)	0.093 J (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.12)
Fluorene	6200	--	18000	--	0.046 J (0.19)	0.03 J (0.18)	ND (0.19)	ND (0.18)	ND (0.19)	ND (0.19)	ND (0.18)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.092 J (0.19)	0.14 J (0.18)	ND (0.19)	ND (0.18)	ND (0.19)	ND (0.19)	ND (0.18)	ND (0.2)
Phenanthrene	4600	--	14000	--	0.13 (0.12)	0.12 (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.12)	0.11 (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.12)
Metals												
Lead	2520	--	2520	45000	1.8 J (2.27)	1.92 J (2.1)	2.28 (2.24)	2.19 J (2.22)	1.82 J (2.23)	2.06 J (2.24)	1.95 J (2.21)	4.51 (2.35)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-886-25	PB-886-26	PB-886-27
Field Sample ID					PB-886-25-SS01	PB-886-26-SS01	PB-886-27-SS01
Collection Depth (ft bgs)	Routine Worker	Routine Worker	Construction	Soil Migration to	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Soil Direct Contact	Soil VI	Worker Soil Direct Contact	GW	Grab	Grab	Grab
Sample Date					7/15/2022	10/7/2021	10/7/2021
Comments							
Volatile Organic Compounds							
Benzene	63	0.46	8.7	98	ND (0.00045)	0.00025 J (0.00057)	ND (0.00047)
Cumene	1000	6.1	87	1000	ND (0.0009)	0.0089 (0.0011)	0.00021 J (0.00095)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00045)	ND (0.00057)	ND (0.00047)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0009)	ND (0.0011)	ND (0.00095)
Ethyl Benzene	2300	15	1300	820	ND (0.0009)	0.0032 (0.0011)	0.00018 J (0.00095)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0018)	ND (0.0023)	ND (0.0019)
Toluene	8000	76	650	9800	ND (0.0009)	0.0012 (0.0011)	ND (0.00095)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0018)	0.17 (0.0023)	0.051 (0.0019)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0018)	0.14 (0.0023)	ND (0.12)
Xylenes (total)	240	1.5	51	340	ND (0.0009)	0.025 (0.0011)	0.0011 J (0.00095)
Semivolatile Organic Compounds							
Anthracene	46000	--	46000	--	ND (0.11)	0.034 J (0.11)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.11)	0.031 J (0.11)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.18)	0.054 J (0.18)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.18)	0.022 J (0.18)	ND (0.17)
Phenanthrene	4600	--	14000	--	ND (0.11)	0.12 (0.11)	ND (0.1)
Pyrene	4600	--	14000	--	ND (0.11)	0.045 J (0.11)	ND (0.1)
Metals							
Lead	2520	--	2520	45000	1.81 J (2.18)	2.15 (2.08)	2.28 (2.04)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 2

Summary of PESRM Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	TG04-MW-01 TG04-MW-01-230106 Grab 1/6/2023	TG04-MW-03 TG04-MW-03-230104 Grab 1/4/2023	TG04-MW-03 TG04-MW-03-230104D Grab 1/4/2023 Field Duplicate	S-219 S-219-230106 Grab 1/6/2023
Volatile Organic Compounds										
Benzene	300	550000	3800	4000	250	130000	<u>580 (2.5)</u>	ND (0.5)	ND (0.5)	ND (0.5)
Cumene	37000	9100000	63000	30000	4000	2600	75 (2.5)	ND (0.5)	ND (0.5)	0.28 J (0.5)
1,2-Dibromoethane	17	16000	110	910	160	--	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
1,2-Dichloroethane	330	170000	1200	4900	82	3100000	ND (2.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethyl Benzene	2000	22000000	150000	40000	9700	13000	110 (2.5)	ND (0.5)	ND (0.5)	ND (0.5)
Methyl tert-butyl ether	21000	29000000	210000	190000	42000	11000000	ND (5)	ND (1)	ND (1)	ND (1)
Toluene	25000	100000000	700000	200000	45000	52000	11 (3.8)	ND (0.75)	ND (0.75)	ND (0.75)
1,2,4-Trimethylbenzene	8700	1400000	9700	15000	630	33000	54 (12)	ND (2.5)	ND (2.5)	ND (2.5)
1,3,5-Trimethylbenzene	8800	1300000	9100	15000	590	71000	13 (12)	ND (2.5)	ND (2.5)	ND (2.5)
Xylenes (total)	3700	1900000	13000	17000	860	210000	190 (5)	ND (1)	ND (1)	ND (1)
Semivolatile Organic Compounds										
Anthracene	240000	--	--	19000000	--	40000	0.11 (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	100	--	--	1400000	--	13	0.1 (0.05)	ND (0.05)	0.03 J (0.05)	0.18 (0.05)
Benzo(a)pyrene	10	--	--	5800	--	1.3	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(b)fluoranthene	160	--	--	1400000	--	13	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Benzo(g,h,i)perylene	44000	--	--	5800000	--	12	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Chrysene	16000	--	--	140000000	--	1300	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Fluorene	97000	--	--	7800000	--	7000	0.92 (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Indeno(1,2,3-cd)pyrene	100	--	--	1400000	--	13	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Naphthalene	390	120000	880	280	67	43000	9.4 (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Phenanthrene	73000	--	--	5800000	--	1000	0.25 (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Pyrene	50000	--	--	5800000	--	3000	0.06 J (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Metals										
Lead	--	--	--	--	--	2500	ND (1)	ND (1)	ND (1)	ND (1)

Notes:

- 1 All concentrations reported in ug/L (ppb); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Nonpotable GW Use.
- 3 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 4 No concentrations exceed the Routine Worker GW VI.
- 5 No concentrations exceed the Construction Worker GW Direct Contact.
- 6 Underlined concentrations exceed the Off-Site Resident GW VI.
- 7 No concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4_BH-13-81	AOI4_BH-13-90	AOI4-BH-13-100	AOI4-BH-13-100	AOI4-BH-13-101	AOI4-BH-13-101	AOI4-BH-13-102
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI-4_BH-13-81_8-10'	AOI-4_BH-13-90_8-10'	AOI4-BH-13-100_0-1_31813	AOI4-BH-13-100_5-6_31813	AOI4-BH-13-101_0-1_31813	AOI4-BH-13-101_7-8_31813	AOI4-BH-13-102_0-1_31813
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	8 - 10	8 - 10	0 - 1	5 - 6	0 - 1	7 - 8	0 - 1
Sample Date	Direct Contact		Direct Contact		3/20/2013	3/15/2013	3/18/2013	3/18/2013	3/18/2013	3/18/2013	3/18/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0046)	ND (0.0058)	ND (0.0044)	ND (0.0057)	ND (0.0051)	ND (0.0063)	ND (0.0056)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
Toluene	8000	76	650	9800	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0046)	ND (0.0058)	ND (0.0044)	ND (0.0057)	ND (0.0051)	ND (0.0063)	ND (0.0056)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0046)	ND (0.0058)	ND (0.0044)	ND (0.0057)	ND (0.0051)	ND (0.0063)	ND (0.0056)
Xylenes (total)	240	1.5	51	340	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.036)	ND (0.12)	ND (0.038)	ND (0.037)	0.0182 J (0.037)	ND (0.04)	ND (0.036)
Benzo(a)anthracene	430	--	3200	--	ND (0.036)	ND (0.12)	0.0231 J (0.038)	ND (0.037)	0.0559 (0.037)	ND (0.04)	0.0292 J (0.036)
Benzo(a)pyrene	43	--	7.7	--	ND (0.036)	ND (0.12)	0.0243 J (0.038)	ND (0.037)	0.0449 (0.037)	ND (0.04)	ND (0.036)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.036)	ND (0.12)	0.0303 J (0.038)	ND (0.037)	0.0544 (0.037)	ND (0.04)	ND (0.036)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.036)	ND (0.12)	0.0274 J (0.038)	ND (0.037)	0.0408 (0.037)	ND (0.04)	ND (0.036)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.036)	ND (0.12)	0.0263 J (0.038)	ND (0.037)	0.0787 (0.037)	ND (0.04)	0.0338 J (0.036)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.036)	ND (0.12)	ND (0.038)	ND (0.037)	ND (0.037)	ND (0.04)	ND (0.036)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.036)	ND (0.12)	ND (0.038)	ND (0.037)	ND (0.037)	ND (0.04)	ND (0.036)
Phenanthrene	4600	--	14000	--	ND (0.036)	ND (0.12)	0.0235 J (0.038)	ND (0.037)	0.104 (0.037)	ND (0.04)	0.0401 (0.036)
Pyrene	4600	--	14000	--	ND (0.036)	ND (0.12)	0.0297 J (0.038)	ND (0.037)	0.12 (0.037)	ND (0.04)	0.0476 (0.036)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	2.5 (2.3)	8.6 (1.1)	399 (2.3)	12.8 (2.4)	494 (2.4)	10.2 (2.1)	1620 (2.4)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-BH-13-102	AOI4-BH-13-103	AOI4-BH-13-103	AOI4-BH-13-104	AOI4-BH-13-104	AOI4-BH-13-82	AOI4-BH-13-84
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-13-102_6-7_31813	AOI4-BH-13-103_0-1_31813	AOI4-BH-13-103_2-3_31813	AOI4-BH-13-104_0-5_31513	AOI4-BH-13-104_6-7_31513	AOI4-BH-13-82_6.5-7_031813	AOI4-BH-13-84_5.5-6_031513
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	6 - 7	0 - 1	2 - 3	0 - 0.5	6 - 7	6.5 - 7	5.5 - 6
Sample Date	Direct Contact		Direct Contact		3/18/2013	3/18/2013	3/18/2013	3/15/2013	3/15/2013	3/18/2013	3/15/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	<u>1.96 (0.27)</u>	ND (0.099)	ND (0.00088)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.005)	ND (0.0076)	ND (0.0055)	ND (0.005)	<u>7.31 (1.4)</u>	0.129 J (0.5)	ND (0.0044)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	<u>29.5 (0.27)</u>	0.186 (0.099)	ND (0.00088)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	ND (0.27)	ND (0.099)	ND (0.00088)
Toluene	8000	76	650	9800	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	6.55 (0.27)	ND (0.099)	ND (0.00088)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.005)	ND (0.0076)	ND (0.0055)	ND (0.005)	<u>75.4 (5.5)</u>	0.362 J (0.5)	ND (0.0044)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.005)	ND (0.0076)	ND (0.0055)	ND (0.005)	<u>27.3 (1.4)</u>	0.147 J (0.5)	ND (0.0044)
Xylenes (total)	240	1.5	51	340	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	<u>65.6 (0.27)</u>	0.339 (0.099)	ND (0.00088)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.037)	0.0731 (0.038)	ND (0.04)	ND (0.12)	2.56 (0.12)	ND (0.04)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.037)	0.0807 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.037)	0.0794 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.037)	0.0607 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.037)	0.111 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.037)	0.122 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.037)	ND (0.038)	ND (0.04)	ND (0.12)	6.14 (0.12)	ND (0.04)	ND (0.12)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.037)	0.0654 (0.038)	ND (0.04)	ND (0.12)	<u>21.2 (0.61)</u>	ND (0.04)	ND (0.12)
Phenanthrene	4600	--	14000	--	ND (0.037)	0.285 (0.038)	0.0341 J (0.04)	ND (0.12)	21.7 (0.61)	ND (0.04)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.037)	0.261 (0.038)	ND (0.04)	ND (0.12)	0.697 (0.12)	ND (0.04)	ND (0.12)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	9.2 (2.1)	3020 (2.5)	34 (2)	7 (1.1)	7.9 (1.1)	13.3 (2.5)	6.6 (1)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	AOI4-BH-13-85	AOI4-BH-13-86	AOI4-BH-13-86	AOI4-BH-13-88	AOI4-BH-13-88	AOI4-BH-13-88	AOI4-BH-13-89				
Field Sample ID	AOI4-BH-13-85_5.5-6_031513	AOI4-BH-13-86_2-2.5_031513	AOI4-BH-13-86_5.5-6_031513	AOI4-BH-13-88_1.5-2_31413	AOI4-BH-13-88_3.5-4_031413	AOI4-BH-13-88_5.5-6_031413	AOI4-BH-13-89_5.5-6_031913				
Collection Depth (ft bgs)	5.5 - 6	2 - 2.5	5.5 - 6	1.5 - 2	3.5 - 4	5.5 - 6	5.5 - 6				
Sample Date	3/15/2013	3/15/2013	3/15/2013	3/14/2013	3/14/2013	3/14/2013	3/19/2013				
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.00088)	ND (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0044)	0.0143 (0.0043)	ND (0.0044)	0.694 (0.55)	0.993 (0.5)	ND (0.0051)	ND (0.0045)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.00088)	0.0206 (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00088)	ND (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
Toluene	8000	76	650	9800	ND (0.00088)	ND (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0044)	0.0437 (0.0043)	ND (0.0044)	<u>13.6 (0.55)</u>	<u>6.95 (0.5)</u>	ND (0.0051)	ND (0.0045)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0044)	0.0169 (0.0043)	ND (0.0044)	ND (0.55)	ND (0.5)	ND (0.0051)	ND (0.0045)
Xylenes (total)	240	1.5	51	340	ND (0.00088)	0.0109 (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	0.0692 J (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(a)pyrene	43	--	7.7	--	ND (0.12)	ND (0.12)	0.0431 J (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	0.122 (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	0.0634 J (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.12)	ND (0.12)	ND (0.11)	<u>2.53 (0.12)</u>	<u>0.894 (0.12)</u>	ND (0.12)	ND (0.037)
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	0.107 J (0.11)	0.622 (0.12)	0.393 (0.12)	ND (0.12)	ND (0.037)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	0.147 (0.11)	0.0608 J (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	6.9 (1.1)	7.8 (1.1)	2140 (5.4)	10 (1.2)	7.1 (1.1)	6.2 (1.1)	6.7 (2)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-BH-13-92	AOI4-BH-13-93	AOI4-BH-13-95	AOI4-BH-13-97	AOI4-BH-13-97	AOI4-BH-13-98	AOI4-BH-13-98
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-13-92_8-10'	AOI4-BH-13-93_8-10'	AOI4-BH-13-95_8-10'	AOI4-BH-13-97.0-1_31413	AOI4-BH-13-97-8.5-9.5_31413	AOI4-BH-13-98_6-7_31413	AOI4-BH-13-98-1-2_31413
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	8 - 10	8 - 10	8 - 10	0 - 1	8.5 - 9.5	6 - 7	1 - 2
Sample Date	Direct Contact		Direct Contact		3/18/2013	3/18/2013	3/18/2013	3/14/2013	3/14/2013	3/14/2013	3/14/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	0.127 (0.00096)	ND (0.001)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0045)	ND (0.0038)	ND (0.0045)	ND (0.0047)	ND (0.005)	0.015 (0.0048)	ND (0.0051)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	0.581 (0.098)	ND (0.001)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	ND (0.00096)	ND (0.001)
Toluene	8000	76	650	9800	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	0.702 (0.098)	ND (0.001)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0045)	ND (0.0038)	ND (0.0045)	ND (0.0047)	ND (0.005)	<u>1.15 (0.49)</u>	ND (0.0051)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0045)	ND (0.0038)	ND (0.0045)	ND (0.0047)	ND (0.005)	0.0948 (0.0048)	ND (0.0051)
Xylenes (total)	240	1.5	51	340	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	<u>2.42 (0.098)</u>	ND (0.001)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.105 J (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.0823 J (0.12)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.189 (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.0753 J (0.12)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.112 J (0.12)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.12)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.12)
Phenanthrene	4600	--	14000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.0619 J (0.12)
Pyrene	4600	--	14000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.201 (0.12)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	11.6 (2.4)	10.7 (2.3)	5.5 (2.3)	81.5 (1.1)	2.9 (1)	8 (1.1)	136 (1.1)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	AOI4-BH-13-99				AOI4-BH-13-99		AOI4-BH-16-003		AOI4-BH-16-003		AOI4-BH-16-004		AOI4-BH-16-004		AOI4-BH-16-008		
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-13-99_1.5-2_031813	AOI4-BH-13-99_2.5-3_031813	AOI4-BH-16-003-0-2-20160824	AOI4-BH-16-003-14-15-20160824	AOI4-BH-16-004-0-2-20160824	AOI4-BH-16-004-14-15-20160824	AOI4-BH-16-008-0-2-20160614						
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	1.5 - 2	2.5 - 3	0 - 2	14 - 15	0 - 2	14 - 15	0 - 2	14 - 15	0 - 2	14 - 15	0 - 2	0 - 2	0 - 2
Sample Date	Direct Contact		Direct Contact		3/18/2013	3/18/2013	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	8/24/2016	6/14/2016	
Comments																	
Volatile Organic Compounds																	
Benzene	63	0.46	8.7	98	0.00024 J (0.0012)	0.245 (0.15)	ND (0.00126)	0.00122 (0.0011)	ND (0.00121)	0.00135 (0.0012)							NA
sec-Butylbenzene	--	--	--	--	NA	NA	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)							NA
tert-Butylbenzene	--	--	--	--	NA	NA	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)							NA
Cumene	1000	6.1	87	1000	0.00071 J (0.0059)	0.122 J (0.73)	ND (0.0126)	ND (0.011)	ND (0.0121)	ND (0.012)							NA
Cyclohexane	--	--	--	--	NA	NA	ND (0.00126)	0.0291 (0.0011)	ND (0.00121)	0.00201 (0.0012)							NA
Ethyl Benzene	2300	15	1300	820	ND (0.0012)	0.11 J (0.15)	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)							NA
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0012)	ND (0.15)	0.00155 (0.00126)	0.0177 (0.0011)	ND (0.00121)	ND (0.0012)							NA
Toluene	8000	76	650	9800	ND (0.0012)	0.182 (0.15)	ND (0.00629)	ND (0.0055)	ND (0.00604)	ND (0.00602)							NA
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0059)	0.169 J (0.73)	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)							NA
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0059)	0.0611 J (0.73)	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)							NA
Xylenes (total)	240	1.5	51	340	ND (0.0012)	0.671 (0.15)	ND (0.00377)	ND (0.0033)	ND (0.00362)	ND (0.00361)							NA
Semivolatile Organic Compounds																	
Acenaphthene	9300	--	9200	--	NA	NA	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Anthracene	46000	--	46000	--	0.0675 (0.039)	ND (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Benzo(a)anthracene	430	--	3200	--	0.111 (0.039)	0.0652 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Benzo(a)pyrene	43	--	7.7	--	0.157 (0.039)	0.0875 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Benzo(b)fluoranthene	430	--	3200	--	0.109 (0.039)	0.0954 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Benzo(g,h,i)perylene	4600	--	14000	--	0.215 (0.039)	0.109 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Chrysene	43000	--	320000	--	0.145 (0.039)	0.114 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Fluoranthene	--	--	--	--	NA	NA	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Fluorene	6200	--	18000	--	ND (0.039)	0.191 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Naphthalene	41	0.54	6	27	0.0334 J (0.039)	0.0933 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Phenanthrene	4600	--	14000	--	0.237 (0.039)	0.38 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Pyrene	4600	--	14000	--	0.196 (0.039)	0.14 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)							NA
Metals																	
Cobalt	--	--	--	--	NA	NA	9.05 (1.26)	7.02 (1.1)	8.42 (1.21)	9.13 (1.2)							NA
Lead	2240	--	2240	45000	11600 (12)	1870 (2.4)	8.18 (0.629)	6.69 (0.55)	12.2 (0.604)	10.8 (0.602)	1760 J (0.561)						NA
Nickel	6200	--	700	1700	NA	NA	11.6 (2.52)	11.3 (2.2)	12 (2.41)	6.2 (2.41)							NA
Vanadium	1600	--	350	2800	NA	NA	25.9 (2.52)	22.1 (2.2)	39 (2.41)	21.9 (2.41)							NA
Zinc	--	--	--	--	NA	NA	29.9 (6.29)	29 (5.5)	46.2 (6.04)	17.9 (6.02)							NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-BH-16-009	AOI4-BH-16-010	AOI4-BH-16-011	AOI4-BH-16-011	AOI4-BH-16-012	AOI4-BH-16-013	AOI4-BH-16-013
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-16-009-0-2-20160614	AOI4-BH-16-010-0-2-20160614	-16-011-0-2-20160613_L841529	-16-011-0-2-20160613_L842738	AOI4-BH-16-012-0-2-20160613	AOI4-BH-16-013-0-2-20160630	AOI4-BH-16-013-13-14-20160630
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	13 - 14
Sample Date	Direct Contact		Direct Contact		6/14/2016	6/14/2016	6/13/2016	6/13/2016	6/13/2016	6/30/2016	6/30/2016
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	0.00349 (0.00118)	ND (0.0528)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	0.0208 (0.00118)	0.405 (0.0528)
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	0.00214 (0.00118)	0.131 (0.0528)
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	0.0415 (0.0118)	ND (0.528)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	0.0443 (0.00118)	0.306 (0.0528)
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	ND (0.00118)	ND (0.0528)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	0.0452 (0.00118)	0.205 (0.0528)
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	ND (0.00589)	ND (0.264)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	ND (0.00118)	0.327 (0.0528)
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	ND (0.00118)	0.0551 (0.0528)
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	ND (0.00353)	ND (0.159)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	0.33 (0.194)	ND (0.21)
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	ND (0.194)	ND (0.21)
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	0.262 (0.194)	0.303 (0.21)
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	0.292 (0.194)	ND (0.21)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	10.2 (1.18)	7.43 (1.27)
Lead	2240	--	2240	45000	1490 J (0.583)	160 J (0.574)	4380 J (0.598)	6000 (0.598)	1080 J (0.678)	255 (0.589)	65.1 (0.637)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	18.6 (2.35)	12.1 (2.55)
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	38.2 (2.35)	30.1 (2.55)
Zinc	--	--	--	--	NA	NA	NA	NA	NA	102 (5.89)	113 (6.37)

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-BH-16-014	AOI4-BH-16-014	AOI4-BH-16-015	AOI4-BH-16-015	AOI4-BH-16-018	AOI4-BH-16-018	AOI4-BH-16-022
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-16-014-0-2-20160629	AOI4-BH-16-014-13-14-20160629	AOI4-BH-16-015-0-2-20160622	AOI4-BH-16-015-13-15-20160622	AOI4-BH-16-018-0-2-20160628	AOI4-BH-16-018-14-15-20160628	AOI4-BH-16-022-0-2-20160623
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 2	13 - 14	0 - 2	13 - 15	0 - 2	14 - 15	0 - 2
Sample Date	Direct Contact		Direct Contact		6/29/2016	6/29/2016	6/22/2016	6/22/2016	6/28/2016	6/28/2016	6/23/2016
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.0626 (0.00114)	ND (0.122)	0.0023 (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA
sec-Butylbenzene	--	--	--	--	ND (0.00114)	0.837 (0.122)	0.00291 (0.0012)	ND (0.00107)	ND (0.00129)	17.5 (0.202)	NA
tert-Butylbenzene	--	--	--	--	ND (0.00114)	ND (0.122)	ND (0.0012)	ND (0.00107)	ND (0.00129)	1.06 (0.202)	NA
Cumene	1000	6.1	87	1000	ND (0.0114)	ND (1.22)	ND (0.012)	ND (0.0107)	ND (0.0129)	<u>7.88 (2.02)</u>	NA
Cyclohexane	--	--	--	--	0.00987 (0.00114)	ND (0.122)	0.00525 (0.0012)	ND (0.00107)	ND (0.00129)	8.1 (0.202)	NA
Ethyl Benzene	2300	15	1300	820	0.00835 (0.00114)	ND (0.122)	ND (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA
Methyl tert-butyl ether	2400	16	390	5900	0.0017 (0.00114)	ND (0.122)	ND (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA
Toluene	8000	76	650	9800	ND (0.00568)	ND (0.611)	ND (0.00601)	ND (0.00533)	ND (0.00646)	ND (1.01)	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.00114)	ND (0.122)	ND (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.00114)	ND (0.122)	ND (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA
Xylenes (total)	240	1.5	51	340	ND (0.00341)	ND (0.366)	ND (0.00361)	ND (0.0032)	ND (0.00388)	ND (0.605)	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	0.272 (0.0392)	NA
Anthracene	46000	--	46000	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Benzo(a)anthracene	430	--	3200	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Benzo(a)pyrene	43	--	7.7	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Benzo(b)fluoranthene	430	--	3200	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Benzo(k)fluoranthene	4300	--	32000	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Chrysene	43000	--	320000	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Fluoranthene	--	--	--	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Fluorene	6200	--	18000	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	0.426 (0.0392)	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Naphthalene	41	0.54	6	27	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Phenanthrene	4600	--	14000	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	0.76 (0.0392)	NA
Pyrene	4600	--	14000	--	ND (0.375)	ND (0.0403)	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA
Metals											
Cobalt	--	--	--	--	8.37 (1.14)	8.32 (1.22)	9.36 (1.2)	4.92 (1.07)	8.76 (1.29)	5.96 (1.19)	NA
Lead	2240	--	2240	45000	57.6 (0.568)	13.9 (0.611)	310 (0.601)	17.9 (0.533)	6.97 (0.646)	5.91 (0.593)	644 (0.617)
Nickel	6200	--	700	1700	14.6 (2.27)	13.4 (2.44)	29.4 (2.41)	11.6 (2.13)	12.8 (2.58)	10.2 (2.37)	NA
Vanadium	1600	--	350	2800	47.5 (2.27)	37.1 (2.44)	206 (2.41)	10.3 (2.13)	27.3 (2.58)	14.9 (2.37)	NA
Zinc	--	--	--	--	80.2 (5.68)	37.6 (6.11)	696 (6.01)	38.3 (5.33)	30.7 (6.46)	29.4 (5.93)	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	AOI4-GP-1	AOI4-GP-1	AOI4-GP-2	AOI4-GP-2	AOI4-GP-3	AOI4-GP-3	AOI4-GP-4				
Field Sample ID	GP-1(1.5-2)	GP-1(15-15.5)	GP-2(1.5-2)	GP-2(15-15.5)	GP-3(0-2)	GP-3(15-15.5)	GP-4(1.5-2)~5/28/03~75559				
Collection Depth (ft bgs)	1.5 - 2	15 - 15.5	1.5 - 2	15 - 15.5	0 - 2	15 - 15.5	1.5 - 2				
Sample Date	5/28/2003	5/28/2003	5/28/2003	5/28/2003	5/28/2003	5/28/2003	5/28/2003				
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.25)	0.11 J	ND (0.23)	ND (0.26)	ND (0.31)	ND (0.25)	ND (0.24)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.5	ND (0.36)	ND (1.8)	ND (0.36)	0.31 J	ND (0.36)	1.9 J
Benzo(a)anthracene	430	--	3200	--	2	ND (0.36)	5	ND (0.36)	1.6	ND (0.36)	4.1
Benzo(a)pyrene	43	--	7.7	--	2.2	ND (0.36)	4.8	ND (0.36)	1.4	ND (0.36)	3.5
Benzo(b)fluoranthene	430	--	3200	--	1.8	ND (0.36)	3.8	ND (0.36)	1.1	ND (0.36)	3.2
Benzo(g,h,i)perylene	4600	--	14000	--	0.67	ND (0.36)	1.7 J	ND (0.36)	0.41 J	ND (0.36)	1.2 J
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	1.8	ND (0.36)	4.4	ND (0.36)	1.4	ND (0.36)	4
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.4)	0.4	ND (1.8)	0.2 J	ND (0.42)	ND (0.36)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.2 J	<u>3.7</u>	<u>0.72</u>	<u>2.2</u>	ND (0.31)	0.42	ND (0.24)
Phenanthrene	4600	--	14000	--	1.7	0.99	2.1	0.48	1.1	0.35 J	10
Pyrene	4600	--	14000	--	1.8	ND (0.36)	5.4	ND (0.36)	2	ND (0.36)	7.3
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	AOI4-GP-4	AOI4-GP-5	AOI4-GP-5	AOI4-GP-6	AOI4-GP-6	AOI4-GP-7	AOI4-GP-7				
Field Sample ID	GP-4(15-15.5)	GP-5(1.5-2)~5/28/03~75559	GP-5(15-15.5)	GP-6(1.5-2)	GP-6(15.5-16)	GP-7(1.5-2)	GP-7(15.5-16)				
Collection Depth (ft bgs)	15 - 15.5	1.5 - 2	15 - 15.5	1.5 - 2	15.5 - 16	1.5 - 2	15.5 - 16				
Sample Date	5/28/2003	5/28/2003	5/28/2003	5/28/2003	5/28/2003	5/29/2003	5/29/2003				
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.25)	ND (0.31)	0.14 J	ND (0.27)	ND (0.26)	ND (0.26)	0.34 J
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.37)	0.61 J	ND (0.37)	1.3	ND (0.42)	ND (2)	ND (3.7)
Benzo(a)anthracene	430	--	3200	--	ND (0.37)	2.1	ND (0.37)	2.7	ND (0.42)	ND (2)	ND (3.7)
Benzo(a)pyrene	43	--	7.7	--	ND (0.37)	2.3	ND (0.37)	2.3	ND (0.42)	ND (2)	ND (3.7)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.37)	1.8	ND (0.37)	2	ND (0.42)	1.3 J	ND (3.7)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.37)	0.88 J	ND (0.37)	0.77 J	ND (0.42)	ND (2)	ND (3.7)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.37)	2	ND (0.37)	2.4	ND (0.42)	ND (2)	ND (3.7)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.27 J	ND (0.95)	0.25 J	0.5 J	ND (0.42)	ND (2)	2.2 J
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.24 J	ND (0.31)	0.37	0.13 J	ND (0.26)	ND (0.26)	<u>25</u>
Phenanthrene	4600	--	14000	--	0.69	1.9	0.66	4.7	ND (0.42)	ND (2)	5
Pyrene	4600	--	14000	--	ND (0.37)	2.4	ND (0.37)	3.6	ND (0.42)	ND (2)	ND (3.7)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	AOI4-GP-7	AOI4-GP-8	AOI4-GP-8	AOI4-GP-8	AOI4-GP-9	AOI4-PE-01	AOI4-PE-02				
Field Sample ID	GP-7(6.5-7)	GP-8(1.5-2)	GP-8(15-15.5)	GP-8(7.5-8)	GP-9(Surface)	AOI4-PE-01	AOI4-PE-02				
Collection Depth (ft bgs)	6.5 - 7	1.5 - 2	15 - 15.5	7.5 - 8	0	2 - 2.5	2				
Sample Date	5/29/2003	5/29/2003	5/29/2003	5/29/2003	5/29/2003	7/13/2018	7/13/2018				
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.16 J	ND (0.28)	ND (0.24)	ND (0.26)	0.054 J	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (4.7)	ND (8.1)	ND (0.37)	0.5 J	ND (57)	NA	NA
Benzo(a)anthracene	430	--	3200	--	ND (4.7)	ND (8.1)	ND (0.37)	ND (0.76)	ND (57)	NA	NA
Benzo(a)pyrene	43	--	7.7	--	ND (4.7)	ND (8.1)	ND (0.37)	ND (0.76)	ND (57)	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	ND (4.7)	ND (8.1)	ND (0.37)	ND (0.76)	ND (57)	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	ND (4.7)	ND (8.1)	ND (0.37)	ND (0.76)	ND (57)	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (4.7)	ND (8.1)	ND (0.37)	0.63 J	ND (57)	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	17	7.6 J	ND (0.37)	0.82	ND (57)	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	<u>9.4</u>	<u>40 D</u>	ND (0.24)	<u>0.91</u>	0.46	NA	NA
Phenanthrene	4600	--	14000	--	49	22	0.38	3.4	230	NA	NA
Pyrene	4600	--	14000	--	10	4.1 J	ND (0.37)	1.3	37 J	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	8400 (8.23)	734 (1.44)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-PE-03	AOI4-PE-04	AOI4-PE-05	AOI4-PE-06	AOI4-PE-07	AOI4-PE-08	AOI4-PE-09
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-03	AOI4-PE-04	AOI4-PE-05	AOI4-PE-06	AOI4-PE-07	AOI4-PE-08	AOI4-PE-09
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2 - 2.5	2	0.5 - 1	0.5	1 - 1.5	1	0.5
Sample Date	Direct Contact		Direct Contact		7/13/2018	7/13/2018	7/13/2018	7/13/2018	7/13/2018	7/13/2018	7/23/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	3490 (8.65)	36800 (37.9)	5690 (6.11)	6380 (7.27)	11.3 (1.73)	134 (1.61)	529 (6.23)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-PE-10	AOI4-PE-11	AOI4-PE-12	AOI4-PE-13	AOI4-PE-14	AOI4-PE-15	AOI4-PE-16
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-10	AOI4-PE-11	AOI4-PE-12	AOI4-PE-13	AOI4-PE-14	AOI4-PE-15	AOI4-PE-16
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	1	1 - 1.5	2	2	2	2	2 - 2.5
Sample Date	Direct Contact		Direct Contact		7/23/2018	7/23/2018	7/23/2018	7/23/2018	7/30/2018	7/30/2018	7/30/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	4530 (6.53)	7460 (12.6)	27100 (76.1)	16000 (31.7)	28600 (27.4)	55.3 (1.36)	105 (1.43)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-PE-17	AOI4-PE-18	AOI4-PE-19	AOI4-PE-20	AOI4-PE-21	AOI4-PE-22	AOI4-PE-23
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-17	AOI4-PE-18	AOI4-PE-19	AOI4-PE-20	AOI4-PE-21	AOI4-PE-22	AOI4-PE-23
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2	2	2
Sample Date	Direct Contact		Direct Contact		7/30/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	4240 (13.2)	25600 (62.4)	31700 (62)	38300 (73.5)	35600 (71.4)	7500 (12.7)	132 (1.23)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-PE-24	AOI4-PE-25	AOI4-PE-26	AOI4-PE-27	AOI4-PE-28	AOI4-PE-29	AOI4-PE-30
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-24	AOI4-PE-25	AOI4-PE-26	AOI4-PE-27	AOI4-PE-28	AOI4-PE-29	AOI4-PE-30
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2	2	2
Sample Date	Direct Contact		Direct Contact		8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	295 (1.36)	1020 (1.42)	48.6 (1.85)	162 (1.82)	126 (1.84)	855 (1.76)	97.5 (1.77)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-PE-31	AOI4-PE-32	AOI4-PE-33	AOI4-PE-41	AOI4-PE-43	AOI4-PE-44	AOI4-PE-45
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-31	AOI4-PE-32	AOI4-PE-33	AOI4-PE-41	AOI4-PE-43	AOI4-PE-44	AOI4-PE-45
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2	2	2
Sample Date	Direct Contact		Direct Contact		8/7/2018	8/7/2018	8/7/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	28100 (37)	17400 (34.6)	82.8 (1.76)	368 (1.77)	8050 (7.06)	66400 (100)	2720 (6.41)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-PE-46	AOI4-PE-49	AOI4-PE-51	AOI4-PE-52	AOI4-PE-53	AOI4-PE-54	AOI4-PE-55
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-46	AOI4-PE-49	AOI4-PE-51	AOI4-PE-52	AOI4-PE-53	AOI4-PE-54	AOI4-PE-55
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2	2	2
Sample Date	Direct Contact		Direct Contact		8/9/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	64.4 (1.77)	205 (1.69)	13300 (35.1)	3310 (8.68)	6310 (8.88)	17400 (16.8)	11800 (16.2)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-PE-56	AOI4-PE-57	AOI4-PE-58	AOI4-PE-60	AOI4-PE-61	AOI4-PE-62	AOI4-PE-63
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-56	AOI4-PE-57	AOI4-PE-58	AOI4-PE-60	AOI4-PE-61	AOI4-PE-62	AOI4-PE-63
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2	2	2
Sample Date	Direct Contact		Direct Contact		8/9/2018	8/9/2018	8/9/2018	8/15/2018	8/15/2018	8/15/2018	8/15/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	183 (9.02)	6040 (13.3)	1590 (17.4)	59600 (76.2)	2130 (145)	29100 (74.4)	1370 (13.6)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					AOI4-PE-64	AOI4-PE-65	AST-845-LINE-1	AST-845-LINE-2	AST-845-LINE-3	AST-845-LINE-4	AST-845-LINE-5
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-64	AOI4-PE-65	AST-845-LINE-1	AST-845-LINE-2	AST-845-LINE-3	AST-845-LINE-4	AST-845-LINE-5
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact	Direct Contact	Direct Contact		8/16/2018	8/16/2018	3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	ND,D (0.097)	ND,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	ND,D (0.097)	ND,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	ND,D (0.097)	0.068 J,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	ND,D (0.097)	ND,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	ND,D (0.097)	0.077 J,D (0.12)	ND,D (0.1)	0.09 J,D (0.12)	ND,D (0.13)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)
Benzo(a)anthracene	430	--	3200	--	NA	NA	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	0.49 (0.37)
Benzo(a)pyrene	43	--	7.7	--	NA	NA	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	ND (0.42)	ND (0.41)	ND (0.39)	0.47 (0.4)	0.53 (0.37)
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	ND (0.42)	0.45 (0.41)	ND (0.39)	ND (0.4)	0.49 (0.37)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)
Naphthalene	41	0.54	6	27	NA	NA	ND,D (0.097)	ND,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)
Phenanthrene	4600	--	14000	--	NA	NA	ND (0.42)	0.64 (0.41)	ND (0.39)	ND (0.4)	0.66 (0.37)
Pyrene	4600	--	14000	--	NA	NA	ND (0.42)	0.64 (0.41)	0.45 (0.39)	0.62 (0.4)	1 (0.37)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	10600 (16.9)	22500 (34.9)	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					MW-1	MW-1	MW-2	MW-3	MW-3	MW-4	MW-4
Field Sample ID	Routine	Routine	Construction	Soil Migration	MW-1(1.5-2)	MW-1(11.5-12)	MW-2(0-2)	MW-3(1.5-2)	MW-3(15.5-16)	MW-4(1.5-2)	MW-4(11.5-12)
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	1.5 - 2	11.5 - 12	0 - 2	1.5 - 2	15.5 - 16	1.5 - 2	11.5 - 12
Sample Date	Direct Contact		Direct Contact		5/29/2003	5/29/2003	5/29/2003	5/29/2003	5/29/2003	5/29/2003	5/29/2003
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.24)	ND (0.26)	0.087 J	ND (0.25)	0.065 J	0.054 J	ND (0.25)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.88	ND (0.36)	0.29 J	0.35 J	ND (0.36)	0.33 J	ND (0.41)
Benzo(a)anthracene	430	--	3200	--	2.1	ND (0.36)	0.73	2.7	ND (0.36)	0.93	ND (0.41)
Benzo(a)pyrene	43	--	7.7	--	1.9	ND (0.36)	0.8	5 D	ND (0.36)	1.1	ND (0.41)
Benzo(b)fluoranthene	430	--	3200	--	2	ND (0.36)	0.69	3.9	ND (0.36)	0.98	ND (0.41)
Benzo(g,h,i)perylene	4600	--	14000	--	0.71	ND (0.36)	0.37 J	1.8	ND (0.36)	0.5	ND (0.41)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	2.1	ND (0.36)	0.73	2.5	ND (0.36)	0.91	ND (0.41)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.39	ND (0.36)	ND (0.39)	ND (0.37)	0.6	ND (0.39)	ND (0.41)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.24)	ND (0.26)	0.055 J	ND (0.25)	<u>3.4</u>	0.075 J	ND (0.25)
Phenanthrene	4600	--	14000	--	3.1	ND (0.36)	1.1	0.86	1.4	1.2	ND (0.41)
Pyrene	4600	--	14000	--	3.2	ND (0.36)	1.2	1.8	ND (0.36)	1.1	0.26 J
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-252-LINE-1	PB-252-LINE-2	PB-252-LINE-3	PB-252-LINE-4	PB-252-LINE-5	PB-252-LINE-6	PB-252-PER-1
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-252-LINE-1	PB-252-LINE-2	PB-252-LINE-3	PB-252-LINE-4	PB-252-LINE-5	PB-252-LINE-6	PB-252-PER-1
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	6 - 6.5	6 - 6.5	6 - 6.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.28)	ND,D (0.21)	ND,D (0.22)	<u>22 D (1.7)</u>	<u>1.6 D (0.15)</u>	<u>0.71 D (0.18)</u>	<u>10 D (1.7)</u>
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND,D (0.28)	ND,D (0.21)	ND,D (0.22)	<u>11 D (1.7)</u>	<u>9.9 D (1.5)</u>	<u>14 D (0.18)</u>	<u>7.5 D (1.7)</u>
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	0.15 J,D (0.28)	ND,D (0.21)	ND,D (0.22)	<u>73 D (1.7)</u>	<u>63 D (1.5)</u>	6.7 D (0.18)	<u>37 D (1.7)</u>
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.28)	ND,D (0.21)	ND,D (0.22)	<u>94 D (1.7)</u>	51 D (1.5)	0.45 D (0.18)	7.5 D (1.7)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.36)	ND (0.36)	ND (0.37)	1.6 (0.42)	2.6 (0.41)	2.1 (0.41)	ND (0.4)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND,D (0.28)	0.17 J,D (0.21)	0.19 J,D (0.22)	<u>49 D (1.7)</u>	<u>43 D (1.5)</u>	<u>7.9 D (0.18)</u>	<u>29 D (1.7)</u>
Phenanthrene	4600	--	14000	--	ND (0.36)	0.55 (0.36)	0.91 (0.37)	2.5 (0.42)	4.4 (0.41)	4.1 (0.41)	7.9 D (0.79)
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-252-PER-2	PB-252-PER-3	PB-252-PER-4	PB-252-PER-5	PB-252-PER-6	PB-252-SUB-1	PB-252-SUB-2
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-252-PER-2	PB-252-PER-3	PB-252-PER-4	PB-252-PER-5	PB-252-PER-6	PB-252-SUB-1	PB-252-SUB-2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	5 - 5.5	5 - 5.5
Sample Date	Direct Contact		Direct Contact		5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	<u>2.2 D (0.17)</u>	<u>0.72 D (0.19)</u>	<u>1.7 D (0.18)</u>	<u>2.1 D (0.16)</u>	<u>4.7 D (0.18)</u>	ND,D (0.26)	<u>4.7 D (0.31)</u>
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	<u>12 D (0.17)</u>	<u>11 D (0.19)</u>	<u>6.4 D (0.18)</u>	2.7 D (0.16)	2.3 D (0.18)	ND,D (0.26)	<u>11 D (0.31)</u>
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	<u>35 D (1.7)</u>	<u>23 D (1.9)</u>	<u>18 D (1.8)</u>	6.4 D (0.16)	9.3 D (0.18)	ND,D (0.26)	<u>44 D (3.1)</u>
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.42 D (0.17)	0.59 D (0.19)	0.72 D (0.18)	0.3 D (0.16)	2.7 D (0.18)	ND,D (0.26)	5.2 D (0.31)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.38)	ND (0.42)	ND (0.42)	4.2 (0.39)	0.42 (0.39)	ND (0.38)	ND (0.41)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	<u>4.8 D (0.17)</u>	<u>29 D (1.9)</u>	<u>12 D (0.18)</u>	<u>26 D (1.6)</u>	<u>3.8 D (0.18)</u>	0.26 J,D (0.26)	<u>24 D (0.31)</u>
Phenanthrene	4600	--	14000	--	0.48 (0.38)	0.23 J (0.42)	3.9 (0.42)	14 D (2)	1 (0.39)	ND (0.38)	ND (0.41)
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
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- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-252-SUB-3	PB-826-1	PB-826-2	PB-826-3	PB-826-4	PB-826-5	PB-826-6
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-252-SUB-3	826-1	826-2	826-3	826-4	826-5	826-6
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5 - 5.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		5/30/2007	9/7/2004	9/7/2004	9/7/2004	9/7/2004	9/7/2004	9/7/2004
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.3)	ND (0.0019)	ND (0.002)	ND (0.0019)	ND (0.002)	ND (0.0019)	ND (0.0021)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND,D (0.3)	ND (0.0047)	ND (0.0049)	ND (0.0048)	ND (0.005)	ND (0.0049)	ND (0.0052)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND,D (0.3)	ND (0.0019)	0.0025 J (0.002)	0.0022 J (0.0019)	ND (0.002)	ND (0.0019)	ND (0.0021)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.3)	0.0027 J (0.0019)	0.0054 (0.002)	0.0043 J (0.0019)	ND (0.002)	0.0027 J (0.0019)	ND (0.0021)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	0.068 (0.0034)	0.23 (0.0035)	0.023 J (0.0034)	0.016 (0.00072)	0.0056 J (0.00069)	0.00085 J (0.0007)
Benzo(a)anthracene	430	--	3200	--	NA	0.24 (0.0075)	0.88 (0.031)	0.11 (0.0076)	0.083 (0.0016)	0.027 (0.0015)	0.0056 J (0.0016)
Benzo(a)pyrene	43	--	7.7	--	NA	0.25 (0.011)	0.8 (0.046)	0.16 (0.011)	0.1 (0.0024)	0.032 (0.0023)	0.0085 J (0.0023)
Benzo(b)fluoranthene	430	--	3200	--	NA	0.21 (0.015)	0.71 (0.062)	0.13 (0.015)	0.086 (0.0032)	0.027 (0.0031)	0.0069 J (0.0031)
Benzo(g,h,i)perylene	4600	--	14000	--	NA	0.42 (0.015)	1 (0.015)	0.28 (0.015)	0.17 (0.0032)	0.052 (0.0031)	0.013 J (0.0031)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	0.23 (0.011)	0.82 (0.012)	0.13 (0.011)	0.089 (0.0024)	0.028 (0.0023)	0.0064 J (0.0023)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.43)	0.033 J (0.023)	0.11 J (0.023)	ND (0.023)	0.012 J (0.0048)	ND (0.0046)	ND (0.0047)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	0.097 (0.019)	0.5 (0.019)	0.071 J (0.019)	0.046 (0.004)	0.024 (0.0039)	0.004 J (0.0039)
Naphthalene	41	0.54	6	27	ND,D (0.3)	ND (0.0095)	0.016 J (0.0098)	0.015 J (0.0096)	ND (0.01)	ND (0.0097)	ND (0.01)
Phenanthrene	4600	--	14000	--	ND (0.43)	0.39 (0.011)	1.5 (0.012)	0.15 (0.011)	0.12 (0.0024)	0.031 (0.0023)	0.0059 J (0.0023)
Pyrene	4600	--	14000	--	NA	0.78 (0.026)	2.4 (0.027)	0.44 (0.027)	0.25 (0.0056)	0.076 (0.0054)	0.017 J (0.0055)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-826-7	PB-826-8	PB-826-9	PB-843 LINE 1	PB-843 LINE 2	PB-843 LINE 3	PB-843 LINE 4
Field Sample ID	Routine	Routine	Construction	Soil Migration	826-7	826-8	826-9	843 Line 1	843 Line 2	843 Line 3	843 Line 4
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6
Sample Date	Direct Contact		Direct Contact		9/7/2004	9/7/2004	9/7/2004	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.0021)	ND (0.0021)	ND (0.002)	ND (0.028)	ND (0.028)	ND (0.026)	ND (0.025)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0052)	ND (0.0052)	ND (0.005)	0.11 J (0.056)	ND (0.055)	ND (0.052)	ND (0.05)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.0021)	0.0048 J (0.0021)	ND (0.002)	ND (0.056)	ND (0.055)	ND (0.052)	ND (0.05)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.0021)	0.0081 (0.0021)	0.0036 J (0.002)	ND (0.056)	ND (0.055)	ND (0.052)	ND (0.05)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.00071)	0.023 J (0.0034)	0.025 (0.00068)	0.14 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Benzo(a)anthracene	430	--	3200	--	0.0041 J (0.0016)	0.11 (0.0075)	0.048 (0.0015)	0.12 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Benzo(a)pyrene	43	--	7.7	--	0.0061 J (0.0024)	0.11 (0.011)	0.047 (0.0023)	0.067 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Benzo(b)fluoranthene	430	--	3200	--	0.0048 J (0.0031)	0.11 (0.015)	0.047 (0.003)	0.086 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Benzo(g,h,i)perylene	4600	--	14000	--	0.011 J (0.0031)	0.17 (0.015)	0.068 (0.003)	ND (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.0053 J (0.0024)	0.098 (0.011)	0.074 (0.0023)	0.1 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.0047)	ND (0.023)	0.021 J (0.0045)	0.39 (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.0039)	0.06 J (0.019)	0.02 (0.0038)	ND (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Naphthalene	41	0.54	6	27	ND (0.01)	ND (0.01)	ND (0.0099)	ND (0.056)	ND (0.055)	ND (0.052)	ND (0.05)
Phenanthrene	4600	--	14000	--	0.0051 J (0.0024)	0.13 (0.011)	0.18 (0.0023)	0.8 (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Pyrene	4600	--	14000	--	0.014 J (0.0055)	0.28 (0.026)	0.17 (0.0053)	0.31 (0.038)	ND (0.04)	ND (0.04)	ND (0.039)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-843 LINE 5	PB-843 LINE 6	PB-843 LINE 7	PB-843 LINE 8	PB-843 LINE 9	PB-843 PERIMETER 1	PB-843 PERIMETER 2
Field Sample ID	Routine	Routine	Construction	Soil Migration	843 Line 5	843 Line 6	843 Line 7	843 Line 8	843 Line 9	843 Perimeter 1	843 Perimeter 2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	5.5 - 6	0 - 0.5	0 - 0.5	0 - 0.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.027)	ND (0.029)	ND (0.025)	ND (0.027)	0.035 J (0.026)	ND (0.031)	0.037 J (0.028)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.055)	1.4 (0.057)	ND (0.049)	ND (0.055)	ND (0.052)	ND (0.063)	ND (0.055)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.055)	ND (0.057)	ND (0.049)	ND (0.055)	ND (0.052)	ND (0.063)	ND (0.055)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.055)	ND (0.057)	ND (0.049)	ND (0.055)	ND (0.052)	ND (0.063)	ND (0.055)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.039)	ND (0.078)	ND (0.037)	ND (0.18)	ND (0.037)	ND (0.04)	0.6 (0.039)
Benzo(a)anthracene	430	--	3200	--	ND (0.039)	0.13 J (0.078)	0.31 (0.037)	0.34 J (0.18)	0.087 J (0.037)	ND (0.04)	0.86 (0.039)
Benzo(a)pyrene	43	--	7.7	--	ND (0.039)	0.1 J (0.078)	0.34 (0.037)	0.4 J (0.18)	0.065 J (0.037)	ND (0.04)	0.51 (0.039)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.039)	0.1 J (0.078)	0.49 (0.037)	0.62 J (0.18)	0.099 J (0.037)	ND (0.04)	0.64 (0.039)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.039)	ND (0.078)	0.28 (0.037)	0.57 J (0.18)	0.085 J (0.037)	ND (0.04)	0.23 (0.039)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.039)	0.23 J (0.078)	0.41 (0.037)	0.47 J (0.18)	0.11 J (0.037)	ND (0.04)	0.77 (0.039)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.039)	1 (0.078)	ND (0.037)	ND (0.18)	ND (0.037)	ND (0.04)	0.3 (0.039)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.039)	ND (0.078)	0.3 (0.037)	0.4 J (0.18)	0.054 J (0.037)	ND (0.04)	0.28 (0.039)
Naphthalene	41	0.54	6	27	ND (0.055)	0.067 J (0.057)	ND (0.049)	ND (0.055)	ND (0.052)	ND (0.063)	ND (0.055)
Phenanthrene	4600	--	14000	--	ND (0.039)	2.2 (0.078)	0.14 J (0.037)	0.26 J (0.18)	0.16 J (0.037)	ND (0.04)	2.1 (0.039)
Pyrene	4600	--	14000	--	ND (0.039)	0.37 J (0.078)	0.49 (0.037)	0.53 J (0.18)	0.17 J (0.037)	ND (0.04)	1.5 (0.039)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-843 PERIMETER 3	PB-843 PERIMETER 4	PB-843 PERIMETER 5	PB-843 PERIMETER 6	PB-843 SUB 1	PB-843 SUB 2	PB-843 SUB 3
Field Sample ID	Routine	Routine	Construction	Soil Migration	843 Perimeter 3	843 Perimeter 4	843 Perimeter 5	843 Perimeter 6	843 Sub 1	843 Sub 2	843 Sub 3
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	5 - 5.5	5 - 5.5	5 - 5.5
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.026)	ND (0.024)	ND (0.024)	ND (0.024)	ND (0.023)	ND (0.024)	ND (0.023)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.053)	ND (0.049)	ND (0.047)	ND (0.048)	ND (0.045)	ND (0.048)	ND (0.047)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.053)	ND (0.049)	ND (0.047)	ND (0.048)	ND (0.045)	ND (0.048)	ND (0.047)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.053)	ND (0.049)	ND (0.047)	ND (0.048)	ND (0.045)	ND (0.048)	ND (0.047)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Benzo(a)anthracene	430	--	3200	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Benzo(a)pyrene	43	--	7.7	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Naphthalene	41	0.54	6	27	ND (0.053)	ND (0.049)	ND (0.047)	ND (0.048)	ND (0.045)	ND (0.048)	ND (0.047)
Phenanthrene	4600	--	14000	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Pyrene	4600	--	14000	--	ND (0.038)	ND (0.036)	ND (0.036)	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-844 LINE 10	PB-844 LINE 1	PB-844 LINE 2	PB-844 LINE 3	PB-844 LINE 4	PB-844 LINE 5	PB-844 LINE 6
Field Sample ID	Routine	Routine	Construction	Soil Migration	844 Line 10	844 Line 1	844 Line 2	844 Line 3	844 Line 4	844 Line 5	844 Line 6
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	<u>2.4 (0.096)</u>	ND (0.027)	ND (0.026)	ND (0.029)	ND (0.03)	0.034 J (0.029)	ND (0.03)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	4.2 (0.19)	ND (0.055)	ND (0.053)	ND (0.057)	ND (0.06)	ND (0.058)	ND (0.061)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	8.3 (0.19)	ND (0.055)	ND (0.053)	ND (0.057)	ND (0.06)	ND (0.058)	ND (0.061)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.19)	ND (0.055)	ND (0.053)	ND (0.057)	ND (0.06)	ND (0.058)	ND (0.061)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	4 (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	0.078 J (0.041)	ND (0.041)
Benzo(a)anthracene	430	--	3200	--	0.54 (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	0.31 (0.041)	ND (0.041)
Benzo(a)pyrene	43	--	7.7	--	0.1 J (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	0.31 (0.041)	ND (0.041)
Benzo(b)fluoranthene	430	--	3200	--	0.066 J (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	0.32 (0.041)	ND (0.041)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	0.17 J (0.041)	ND (0.041)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.56 (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	0.27 (0.041)	ND (0.041)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	2.2 (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	ND (0.041)	ND (0.041)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.038 J (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	0.16 J (0.041)	ND (0.041)
Naphthalene	41	0.54	6	27	<u>1.2 (0.19)</u>	ND (0.055)	ND (0.053)	ND (0.057)	ND (0.06)	ND (0.058)	ND (0.061)
Phenanthrene	4600	--	14000	--	4.1 (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	0.23 (0.041)	ND (0.041)
Pyrene	4600	--	14000	--	0.43 (0.036)	ND (0.041)	ND (0.037)	ND (0.041)	ND (0.041)	0.29 (0.041)	ND (0.041)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-844 LINE 7	PB-844 LINE 8	PB-844 LINE 9	PB-844 PERIMETER 1	PB-844 PERIMETER 2	PB-844 PERIMETER 3	PB-844 PERIMETER 4
Field Sample ID	Routine	Routine	Construction	Soil Migration	844 Line 7	844 Line 8	844 Line 9	844 Perimeter 1	844 Perimeter 2	844 Perimeter 3	844 Perimeter 4
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	5.5 - 6	5.5 - 6	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.029)	0.067 J (0.027)	0.035 J (0.027)	ND (0.026)	ND (0.029)	ND (0.026)	0.38 (0.031)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.058)	ND (0.054)	0.34 (0.054)	ND (0.052)	ND (0.058)	ND (0.053)	ND (0.061)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.058)	ND (0.054)	0.22 J (0.054)	ND (0.052)	ND (0.058)	ND (0.053)	0.32 (0.061)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.058)	ND (0.054)	ND (0.054)	ND (0.052)	ND (0.058)	ND (0.053)	0.52 (0.061)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.04)	ND (0.04)	ND (0.041)	0.17 J (0.038)	0.25 (0.039)	0.15 J (0.039)	0.92 (0.042)
Benzo(a)anthracene	430	--	3200	--	0.057 J (0.04)	0.11 J (0.04)	0.17 J (0.041)	0.57 (0.038)	0.64 (0.039)	0.53 (0.039)	2.3 (0.042)
Benzo(a)pyrene	43	--	7.7	--	0.054 J (0.04)	0.11 J (0.04)	0.2 (0.041)	0.68 (0.038)	0.51 (0.039)	0.5 (0.039)	1.8 (0.042)
Benzo(b)fluoranthene	430	--	3200	--	0.054 J (0.04)	0.13 J (0.04)	0.19 J (0.041)	0.72 (0.038)	0.56 (0.039)	0.53 (0.039)	2.1 (0.042)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.04)	0.082 J (0.04)	0.15 J (0.041)	0.44 (0.038)	0.32 (0.039)	0.28 (0.039)	1 (0.042)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.056 J (0.04)	0.12 J (0.04)	0.45 (0.041)	0.52 (0.038)	0.6 (0.039)	0.49 (0.039)	1.9 (0.042)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.04)	ND (0.04)	0.97 (0.041)	0.075 J (0.038)	0.1 J (0.039)	0.075 J (0.039)	0.42 (0.042)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.04)	0.073 J (0.04)	0.14 J (0.041)	0.54 (0.038)	0.35 (0.039)	0.32 (0.039)	1.2 (0.042)
Naphthalene	41	0.54	6	27	ND (0.058)	ND (0.054)	<u>0.95 (0.054)</u>	ND (0.052)	ND (0.058)	ND (0.053)	0.13 J (0.061)
Phenanthrene	4600	--	14000	--	0.056 J (0.04)	0.076 J (0.04)	1.9 (0.041)	0.55 (0.038)	0.71 (0.039)	0.6 (0.039)	3 (0.042)
Pyrene	4600	--	14000	--	0.069 J (0.04)	0.14 J (0.04)	0.32 (0.041)	0.62 (0.038)	0.9 (0.039)	0.66 (0.039)	3 (0.042)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-844 PERIMETER 5	PB-844 PERIMETER 6	PB-844 SUB 1	PB-844 SUB 2	PB-844 SUB 3	PB-845 PERIMETER 1	PB-845 PERIMETER 2
Field Sample ID	Routine	Routine	Construction	Soil Migration	844 Perimeter 5	844 Perimeter 6	844 Sub 1	844 Sub 2	844 Sub 3	845 Perimeter 1	845 Perimeter 2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	5 - 5.5	5 - 5.5	5 - 5.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/24/2006	8/24/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.027)	ND (0.027)	0.031 J (0.026)	ND (0.028)	0.095 J (0.027)	ND (0.028)	ND (0.026)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.073 J (0.053)	ND (0.054)	ND (0.052)	ND (0.056)	ND (0.054)	ND (0.057)	ND (0.052)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.053)	ND (0.054)	ND (0.052)	ND (0.056)	ND (0.054)	ND (0.057)	ND (0.052)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.053)	ND (0.054)	ND (0.052)	ND (0.056)	0.078 J (0.054)	ND (0.057)	ND (0.052)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.48 (0.039)	0.32 (0.038)	0.14 J (0.04)	ND (0.04)	0.078 J (0.039)	ND (0.04)	1.2 (0.039)
Benzo(a)anthracene	430	--	3200	--	0.11 J (0.039)	0.78 (0.038)	0.21 (0.04)	ND (0.04)	0.11 J (0.039)	ND (0.04)	2.8 (0.039)
Benzo(a)pyrene	43	--	7.7	--	0.068 J (0.039)	0.69 (0.038)	0.14 J (0.04)	ND (0.04)	0.089 J (0.039)	0.044 J (0.04)	2.3 (0.039)
Benzo(b)fluoranthene	430	--	3200	--	0.093 J (0.039)	0.87 (0.038)	0.15 J (0.04)	ND (0.04)	0.097 J (0.039)	0.05 J (0.04)	2.8 (0.039)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.039)	0.42 (0.038)	0.073 J (0.04)	ND (0.04)	0.13 J (0.039)	0.056 J (0.04)	1.4 (0.039)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.12 J (0.039)	0.74 (0.038)	0.2 (0.04)	ND (0.04)	0.15 J (0.039)	0.068 J (0.04)	2.8 (0.039)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	1.2 (0.039)	0.15 J (0.038)	0.067 J (0.04)	ND (0.04)	ND (0.039)	ND (0.04)	0.51 (0.039)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.048 J (0.039)	0.49 (0.038)	0.087 J (0.04)	ND (0.04)	0.088 J (0.039)	ND (0.04)	1.4 (0.039)
Naphthalene	41	0.54	6	27	ND (0.053)	ND (0.054)	ND (0.052)	ND (0.056)	ND (0.054)	ND (0.057)	0.12 J (0.052)
Phenanthrene	4600	--	14000	--	3.4 (0.039)	1 (0.038)	0.52 (0.04)	ND (0.04)	0.18 J (0.039)	ND (0.04)	4.3 (0.078)
Pyrene	4600	--	14000	--	0.38 (0.039)	1.1 (0.038)	0.37 (0.04)	ND (0.04)	0.17 J (0.039)	0.057 J (0.04)	4.4 (0.078)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-845 PERIMETER 3	PB-845 PERIMETER 4	PB-845 PERIMETER 5	PB-845 SUB 1	PB-845 SUB 2	PB-845 SUB 3	PB-845-PER-6
Field Sample ID	Routine	Routine	Construction	Soil Migration	845 Perimeter 3	845 Perimeter 4	845 Perimeter 5	845 Sub 1	845 Sub 2	845 Sub 3	PB-845-PER-6
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	3 - 3.5	5 - 5.5	5 - 5.5	5 - 5.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	2/12/2008
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.029)	ND (0.028)	ND (0.029)	ND (0.028)	ND (0.029)	ND (0.027)	ND (0.025)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.057)	ND (0.056)	0.18 J (0.057)	ND (0.055)	ND (0.058)	ND (0.054)	ND (0.05)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.057)	ND (0.056)	ND (0.057)	ND (0.055)	ND (0.058)	ND (0.054)	ND (0.05)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.057)	ND (0.056)	ND (0.057)	ND (0.055)	ND (0.058)	ND (0.054)	ND (0.05)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.43 (0.039)	0.24 (0.038)	ND (0.2)	0.4 (0.039)	0.11 J (0.04)	0.59 (0.038)	ND (0.036)
Benzo(a)anthracene	430	--	3200	--	1.5 (0.039)	0.75 (0.038)	0.59 J (0.2)	1.2 (0.039)	0.11 J (0.04)	0.64 (0.038)	ND (0.036)
Benzo(a)pyrene	43	--	7.7	--	1.4 (0.039)	0.68 (0.038)	0.65 J (0.2)	0.86 (0.039)	0.085 J (0.04)	0.44 (0.038)	0.052 J (0.036)
Benzo(b)fluoranthene	430	--	3200	--	1.6 (0.039)	0.88 (0.038)	1.2 (0.2)	1.2 (0.039)	0.12 J (0.04)	0.65 (0.038)	0.064 J (0.036)
Benzo(g,h,i)perylene	4600	--	14000	--	0.84 (0.039)	0.46 (0.038)	0.72 J (0.2)	0.48 (0.039)	0.051 J (0.04)	0.25 (0.038)	0.074 J (0.036)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	1.5 (0.039)	0.74 (0.038)	3.1 (0.2)	1.2 (0.039)	0.14 J (0.04)	0.66 (0.038)	0.064 J (0.036)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.18 J (0.039)	0.13 J (0.038)	0.59 J (0.2)	0.19 J (0.039)	0.19 J (0.04)	0.52 (0.038)	ND (0.036)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.81 (0.039)	0.43 (0.038)	0.48 J (0.2)	0.53 (0.039)	0.061 J (0.04)	0.27 (0.038)	0.039 J (0.036)
Naphthalene	41	0.54	6	27	ND (0.057)	ND (0.056)	<u>1.2 (0.057)</u>	0.067 J (0.055)	0.31 (0.058)	0.45 (0.054)	0.074 J (0.05)
Phenanthrene	4600	--	14000	--	2 (0.039)	0.97 (0.038)	1.8 (0.2)	1.7 (0.039)	0.62 (0.04)	1.9 (0.038)	ND (0.036)
Pyrene	4600	--	14000	--	2.6 (0.039)	1.3 (0.038)	2 (0.2)	2.2 (0.039)	0.28 (0.04)	1.3 (0.038)	0.046 J (0.036)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-846 LINE 1	PB-846 LINE 2	PB-846 LINE 3	PB-846 LINE 4	PB-846 LINE 5	PB-846 LINE 6	PB-846 LINE 7
Field Sample ID	Routine	Routine	Construction	Soil Migration	846 Line 1	846 Line 2	846 Line 3	846 Line 4	846 Line 5	846 Line 6	846 Line 7
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.026)	ND (0.027)	ND (0.028)	0.037 J (0.029)	0.22 J (0.027)	0.12 J (0.026)	0.029 J (0.028)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.051)	ND (0.054)	ND (0.055)	0.16 J (0.059)	0.29 (0.054)	ND (0.052)	ND (0.056)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.051)	ND (0.054)	ND (0.055)	ND (0.059)	0.62 (0.054)	ND (0.052)	ND (0.056)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.051)	ND (0.054)	ND (0.055)	ND (0.059)	0.12 J (0.054)	0.1 J (0.052)	ND (0.056)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.038 J (0.035)	ND (0.036)	ND (0.039)	0.12 J (0.036)	0.16 J (0.039)	0.24 (0.035)	0.22 (0.038)
Benzo(a)anthracene	430	--	3200	--	0.066 J (0.035)	ND (0.036)	ND (0.039)	0.1 J (0.036)	0.38 (0.039)	0.37 (0.035)	0.58 (0.038)
Benzo(a)pyrene	43	--	7.7	--	0.05 J (0.035)	ND (0.036)	ND (0.039)	0.038 J (0.036)	0.32 (0.039)	0.2 (0.035)	0.49 (0.038)
Benzo(b)fluoranthene	430	--	3200	--	0.063 J (0.035)	ND (0.036)	ND (0.039)	0.061 J (0.036)	0.43 (0.039)	0.3 (0.035)	0.65 (0.038)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.035)	ND (0.036)	ND (0.039)	ND (0.036)	0.21 (0.039)	0.12 J (0.035)	0.34 (0.038)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.067 J (0.035)	ND (0.036)	ND (0.039)	0.29 (0.036)	0.51 (0.039)	0.85 (0.035)	0.55 (0.038)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.035)	ND (0.036)	ND (0.039)	0.73 (0.036)	0.38 (0.039)	0.55 (0.035)	0.14 J (0.038)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.035)	ND (0.036)	ND (0.039)	ND (0.036)	0.2 (0.039)	0.096 J (0.035)	0.33 (0.038)
Naphthalene	41	0.54	6	27	0.14 J (0.051)	ND (0.054)	ND (0.055)	0.14 J (0.059)	<u>0.76 (0.054)</u>	0.062 J (0.052)	0.1 J (0.056)
Phenanthrene	4600	--	14000	--	0.12 J (0.035)	ND (0.036)	ND (0.039)	1.9 (0.036)	1.6 (0.039)	1.4 (0.035)	0.73 (0.038)
Pyrene	4600	--	14000	--	0.12 J (0.035)	0.045 J (0.036)	ND (0.039)	0.3 (0.036)	0.68 (0.039)	0.88 (0.035)	1 (0.038)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-846 PERIMETER 1	PB-846 PERIMETER 2	PB-846 PERIMETER 3	PB-846 PERIMETER 4	PB-846 PERIMETER 5	PB-846 PERIMETER 6	PB-846 SUB 1
Field Sample ID	Routine	Routine	Construction	Soil Migration	846 Perimeter 1	846 Perimeter 2	846 Perimeter 3	846 Perimeter 4	846 Perimeter 5	846 Perimeter 6	846 Sub 1
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	5 - 5.5
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	<u>5 (0.027)</u>	0.039 J (0.026)	ND (0.027)	ND (0.028)	ND (0.026)	0.12 J (0.026)	ND (0.025)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	<u>6.5 (0.053)</u>	ND (0.052)	ND (0.054)	ND (0.057)	ND (0.052)	0.063 J (0.052)	ND (0.049)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	1.8 (0.053)	ND (0.052)	ND (0.054)	ND (0.057)	ND (0.052)	0.063 J (0.052)	ND (0.049)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.28 (0.053)	ND (0.052)	ND (0.054)	ND (0.057)	ND (0.052)	ND (0.052)	ND (0.049)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	2 (0.038)	0.086 J (0.039)	1.5 (0.039)	0.19 J (0.039)	ND (0.039)	2 (0.039)	ND (0.038)
Benzo(a)anthracene	430	--	3200	--	3.4 (0.038)	0.17 J (0.039)	3.9 (0.039)	1.3 (0.039)	ND (0.039)	3.5 (0.039)	ND (0.038)
Benzo(a)pyrene	43	--	7.7	--	2.6 (0.038)	0.16 J (0.039)	3.3 (0.039)	1.4 (0.039)	ND (0.039)	2.4 (0.039)	ND (0.038)
Benzo(b)fluoranthene	430	--	3200	--	3.1 (0.038)	0.26 (0.039)	4.4 (0.039)	1.8 (0.039)	ND (0.039)	3.2 (0.039)	ND (0.038)
Benzo(g,h,i)perylene	4600	--	14000	--	1.4 (0.038)	0.2 (0.039)	1.8 (0.039)	0.63 (0.039)	ND (0.039)	1.4 (0.039)	ND (0.038)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	4 (0.038)	0.28 (0.039)	3.6 (0.039)	1.1 (0.039)	ND (0.039)	3.4 (0.039)	ND (0.038)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	4.2 (0.038)	0.09 J (0.039)	0.57 (0.039)	0.11 J (0.039)	ND (0.039)	1.7 (0.039)	ND (0.038)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	1.4 (0.038)	0.13 J (0.039)	1.9 (0.039)	0.73 (0.039)	ND (0.039)	1.4 (0.039)	ND (0.038)
Naphthalene	41	0.54	6	27	<u>2.3 (0.053)</u>	0.095 J (0.052)	0.16 J (0.054)	ND (0.057)	ND (0.052)	<u>1.1 (0.052)</u>	ND (0.049)
Phenanthrene	4600	--	14000	--	9.3 (0.19)	0.3 (0.039)	4.9 (0.19)	0.69 (0.039)	ND (0.039)	9.1 (0.2)	ND (0.038)
Pyrene	4600	--	14000	--	4.1 (0.038)	0.35 (0.039)	6.3 (0.19)	1.1 (0.039)	ND (0.039)	7.2 (0.2)	ND (0.038)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-846 SUB 2	PB-846 SUB 3	PB-847-1	PB-847-2	PB-847-3	PB-847-4	PB-847-5
Field Sample ID	Routine	Routine	Construction	Soil Migration	846 Sub 2	846 Sub 3	AST-847-1/0-0.5	AST-847-2/0-0.5	AST-847-3/0-0.5	AST-847-4/0-0.5	AST-847-5/0-0.5
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5 - 5.5	5 - 5.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	10/16/2006	10/16/2006	10/16/2006	10/16/2006	10/16/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.025)	0.027 J (0.026)	ND (0.028)	ND (0.028)	ND (0.027)	ND (0.028)	ND (0.028)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.05)	ND (0.053)	ND (0.056)	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.05)	ND (0.053)	ND (0.056)	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.05)	ND (0.053)	ND (0.056)	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	ND (0.056)	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.036)	1.6 (0.04)	ND (0.036)	0.061 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)
Benzo(a)anthracene	430	--	3200	--	ND (0.036)	3.8 (0.04)	ND (0.036)	0.17 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)
Benzo(a)pyrene	43	--	7.7	--	ND (0.036)	2.9 (0.04)	ND (0.036)	0.18 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.036)	3.6 (0.04)	0.046 J (0.036)	0.16 J (0.038)	ND (0.038)	ND (0.039)	0.043 J (0.038)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.036)	2 (0.04)	ND (0.036)	0.091 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.036)	3.7 (0.04)	0.079 J (0.036)	0.13 J (0.038)	ND (0.038)	ND (0.039)	0.048 J (0.038)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.036)	1.1 (0.04)	ND (0.036)	ND (0.038)	ND (0.038)	ND (0.039)	ND (0.038)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.036)	1.8 (0.04)	ND (0.036)	0.091 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)
Naphthalene	41	0.54	6	27	ND (0.05)	0.16 J (0.053)	ND (0.056)	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)
Phenanthrene	4600	--	14000	--	ND (0.036)	6.2 (0.12)	0.043 J (0.036)	0.3 (0.038)	ND (0.038)	ND (0.039)	0.081 J (0.038)
Pyrene	4600	--	14000	--	ND (0.036)	6.4 (0.12)	0.05 J (0.036)	0.31 (0.038)	ND (0.038)	ND (0.039)	0.085 J (0.038)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	268 (0.464)	185 (0.493)	177 (0.497)	35.1 (0.516)	154 (0.492)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-847-6	PB-848 LINE 1	PB-848 LINE 2	PB-848 LINE 3	PB-848 LINE 6	PB-848 LINE 7	PB-848 PERIMETER 1
Field Sample ID	Routine	Routine	Construction	Soil Migration	AST-847-6/0-0.5	848 Line 1	848 Line 2	848 Line 3	848 Line 6	848 Line 7	848 Perimeter 1
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	5.5 - 6	5.5 - 6	3 - 3.5
Sample Date	Direct Contact		Direct Contact		10/16/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.028)	ND (0.025)	ND (0.028)	ND (0.027)	ND (0.028)	0.1 J (0.028)	ND (0.028)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.056)	ND (0.05)	ND (0.055)	ND (0.054)	0.81 (0.055)	4.6 (0.055)	ND (0.055)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.056)	ND (0.05)	ND (0.055)	ND (0.054)	ND (0.055)	0.26 J (0.055)	ND (0.055)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.056)	ND (0.05)	ND (0.055)	ND (0.054)	ND (0.055)	ND (0.055)	ND (0.055)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	ND (0.056)	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.039)	ND (0.18)	ND (0.037)	ND (0.039)	0.11 J (0.041)	0.35 (0.041)	ND (0.04)
Benzo(a)anthracene	430	--	3200	--	ND (0.039)	ND (0.18)	0.075 J (0.037)	ND (0.039)	0.071 J (0.041)	0.16 J (0.041)	ND (0.04)
Benzo(a)pyrene	43	--	7.7	--	ND (0.039)	0.23 J (0.18)	0.058 J (0.037)	ND (0.039)	ND (0.041)	0.14 J (0.041)	ND (0.04)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.039)	ND (0.18)	0.067 J (0.037)	ND (0.039)	ND (0.041)	0.12 J (0.041)	ND (0.04)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.039)	ND (0.18)	0.059 J (0.037)	ND (0.039)	ND (0.041)	0.067 J (0.041)	ND (0.04)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.039)	0.36 J (0.18)	0.083 J (0.037)	ND (0.039)	0.16 J (0.041)	0.53 (0.041)	ND (0.04)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.039)	ND (0.18)	ND (0.037)	ND (0.039)	0.51 (0.041)	1.3 (0.041)	ND (0.04)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.039)	ND (0.18)	0.044 J (0.037)	ND (0.039)	ND (0.041)	0.059 J (0.041)	ND (0.04)
Naphthalene	41	0.54	6	27	0.063 J (0.056)	ND (0.05)	ND (0.055)	0.071 J (0.054)	ND (0.055)	ND (0.055)	ND (0.055)
Phenanthrene	4600	--	14000	--	ND (0.039)	ND (0.18)	0.048 J (0.037)	ND (0.039)	0.87 (0.041)	3.1 (0.041)	ND (0.04)
Pyrene	4600	--	14000	--	ND (0.039)	ND (0.18)	0.1 J (0.037)	0.042 J (0.039)	0.15 J (0.041)	0.44 (0.041)	ND (0.04)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	15.8 (0.505)	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-848 PERIMETER 2	PB-848 PERIMETER 3	PB-848 PERIMETER 6	PB-848 SUB 1	PB-848 SUB 2	PB-848 SUB 3	PB848-18-1-1
Field Sample ID	Routine	Routine	Construction	Soil Migration	848 Perimeter 2	848 Perimeter 3	848 Perimeter 6	848 Sub 1	848 Sub 2	848 Sub 3	PB848-001G (1-1)
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	3 - 3.5	5 - 5.5	5 - 5.5	5 - 5.5	0.5 - 1
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	5/7/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.027)	ND (0.027)	ND (0.028)	ND (0.03)	ND (0.027)	<u>20 (0.28)</u>	0.018 (0.004)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.053)	0.15 J (0.053)	ND (0.057)	ND (0.059)	ND (0.055)	<u>8.9 (0.056)</u>	ND (0.004)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.053)	ND (0.053)	ND (0.057)	ND (0.059)	ND (0.055)	<u>46 (0.56)</u>	ND (0.004)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	ND (0.004)
Toluene	8000	76	650	9800	ND (0.053)	ND (0.053)	ND (0.057)	ND (0.059)	ND (0.055)	1.5 (0.056)	0.009 (0.004)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	ND (0.004)
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	ND (0.004)
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	0.003 J (0.004)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.04)	0.06 J (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	0.21 (0.039)	NA
Benzo(a)anthracene	430	--	3200	--	ND (0.04)	ND (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	ND (0.039)	NA
Benzo(a)pyrene	43	--	7.7	--	ND (0.04)	ND (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	ND (0.039)	NA
Benzo(b)fluoranthene	430	--	3200	--	ND (0.04)	ND (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	ND (0.039)	NA
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.04)	ND (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	ND (0.039)	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.04)	0.15 J (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	ND (0.039)	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.04)	0.59 (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	2.2 (0.039)	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.04)	ND (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	ND (0.039)	NA
Naphthalene	41	0.54	6	27	ND (0.053)	0.059 J (0.053)	ND (0.057)	ND (0.059)	ND (0.055)	<u>4.9 (0.056)</u>	NA
Phenanthrene	4600	--	14000	--	ND (0.04)	0.88 (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	1.9 (0.039)	NA
Pyrene	4600	--	14000	--	ND (0.04)	0.12 J (0.039)	ND (0.039)	ND (0.04)	ND (0.041)	ND (0.039)	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB848-18-1-2	PB848-18-1-4	PB848-18-2-11	PB848-18-2-2	PB848-18-2-5	PB-848-LINE-10	PB-848-LINE-11
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB848-002G (1-2)	PB848-003G (1-4)	PB848-006G (2-11)	PB848-004G (2-2)	PB848-005G (2-5)	PB-848-LINE-10	PB-848-LINE-11
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	5.5 - 6	5.5 - 6
Sample Date	Direct Contact		Direct Contact		5/7/2018	5/7/2018	5/8/2018	5/8/2018	5/8/2018	5/30/2007	5/30/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.03 (0.005)	0.042 (0.005)	0.003 J (0.005)	0.001 J (0.005)	0.0009 J (0.006)	ND,D (0.15)	ND,D (0.16)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.006)	2.5 D (0.15)	ND,D (0.16)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	0.0009 J (0.005)	0.001 J (0.005)	ND (0.005)	ND (0.005)	ND (0.006)	0.69 D (0.15)	0.084 J,D (0.16)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.006)	NA	NA
Toluene	8000	76	650	9800	0.011 (0.005)	0.018 (0.005)	0.005 J (0.005)	ND (0.005)	ND (0.006)	ND,D (0.15)	0.1 J,D (0.16)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.005)	0.001 J (0.005)	ND (0.005)	ND (0.005)	ND (0.006)	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.006)	NA	NA
Xylenes (total)	240	1.5	51	340	0.005 (0.005)	0.007 (0.005)	0.002 J (0.005)	ND (0.005)	ND (0.006)	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	ND (0.43)	ND (0.4)
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	ND (0.43)	ND (0.4)
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	ND (0.43)	ND (0.4)
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	ND (0.43)	ND (0.4)
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	ND (0.43)	ND (0.4)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	ND (0.43)	ND (0.4)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	0.66 (0.43)	0.38 J (0.4)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	ND (0.43)	ND (0.4)
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	0.28 D (0.15)	0.3 D (0.16)
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	1.5 (0.43)	ND (0.4)
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	ND (0.43)	ND (0.4)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-848-LINE-12	PB-848-LINE-13	PB-848-LINE-4	PB-848-LINE-5	PB-848-LINE-8	PB-848-LINE-9	PB-848-PER-4
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-848-LINE-12	PB-848-LINE-13	PB-848-LINE-4	PB-848-LINE-5	PB-848-LINE-8	PB-848-LINE-9	PB-848-PER-4
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	3 - 3.5
Sample Date	Direct Contact		Direct Contact		5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.33)	0.13 J,D (0.21)	ND,D (0.19)	ND,D (0.3)	ND,D (0.27)	ND,D (0.18)	<u>0.93 D (0.18)</u>
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.41 D (0.33)	ND,D (0.21)	<u>8.5 D (0.19)</u>	0.94 D (0.3)	<u>8.6 D (0.27)</u>	0.9 D (0.18)	0.63 D (0.18)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	0.24 J,D (0.33)	0.16 J,D (0.21)	ND,D (0.19)	ND,D (0.3)	1.7 D (0.27)	0.2 D (0.18)	0.27 D (0.18)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.33)	ND,D (0.21)	ND,D (0.19)	ND,D (0.3)	ND,D (0.27)	0.14 J,D (0.18)	ND,D (0.18)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.42)	ND (0.39)	ND (0.43)	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)
Benzo(a)anthracene	430	--	3200	--	ND (0.42)	ND (0.39)	ND (0.43)	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)
Benzo(a)pyrene	43	--	7.7	--	ND (0.42)	ND (0.39)	ND (0.43)	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.42)	ND (0.39)	ND (0.43)	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.42)	ND (0.39)	ND (0.43)	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.42)	ND (0.39)	ND (0.43)	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.42)	ND (0.39)	0.75 (0.43)	ND (0.43)	0.83 (0.41)	0.48 (0.42)	10 D (2.3)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.42)	ND (0.39)	ND (0.43)	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)
Naphthalene	41	0.54	6	27	<u>1.9 D (0.33)</u>	ND,D (0.21)	ND,D (0.19)	ND,D (0.3)	0.33 D (0.27)	<u>0.9 D (0.18)</u>	ND,D (0.18)
Phenanthrene	4600	--	14000	--	ND (0.42)	ND (0.39)	1.7 (0.43)	ND (0.43)	1.5 (0.41)	0.79 (0.42)	13 D (2.3)
Pyrene	4600	--	14000	--	ND (0.42)	ND (0.39)	ND (0.43)	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-848-PER-5	PB-849-LINE-1	PB-849-LINE-2	PB-849-LINE-3	PB-849-LINE-4	PB-849-PER1	PB-849-PER2
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-848-PER-5	PB-849-LINE-1	PB-849-LINE-2	PB-849-LINE-3	PB-849-LINE-4	PB-849-PER1	PB-849-PER2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		5/30/2007	9/4/2007	9/4/2007	9/4/2007	9/4/2007	5/25/2007	5/25/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.18)	ND (0.0056)	ND (0.0061)	0.0046 J (0.0061)	ND (0.0058)	ND,D (0.18)	ND,D (0.16)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND,D (0.18)	ND (0.0056)	ND (0.0061)	ND (0.0061)	ND (0.0058)	ND,D (0.18)	ND,D (0.16)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND,D (0.18)	ND (0.0056)	ND (0.0061)	ND (0.0061)	ND (0.0058)	ND,D (0.18)	ND,D (0.16)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.18)	ND (0.0056)	ND (0.0061)	0.0047 J (0.0061)	ND (0.0058)	ND,D (0.18)	ND,D (0.16)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Benzo(a)anthracene	430	--	3200	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Benzo(a)pyrene	43	--	7.7	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Naphthalene	41	0.54	6	27	ND,D (0.18)	0.0039 J (0.0056)	0.002 J (0.0061)	0.0036 J (0.0061)	0.002 J (0.0058)	ND,D (0.18)	ND,D (0.16)
Phenanthrene	4600	--	14000	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Pyrene	4600	--	14000	--	ND (0.37)	ND,D (3.7)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-849-PER3	PB-849-PER4	PB-849-PER5	PB-849-SUB1	PB-880-10	PB-880-11	PB-880-1
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-849-PER3	PB-849-PER4	PB-849-PER5	PB-849-SUB1	880-10	880-11	880-1
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	3 - 3.5	5 - 5.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		5/25/2007	5/25/2007	5/25/2007	5/25/2007	4/24/2004	4/24/2004	4/8/2004
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)	ND,D (0.31)	0.33 (0.028)	<u>1.1 (0.029)</u>	0.42 (0.01)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)	ND,D (0.31)	0.3 (0.056)	2.7 (0.057)	0.35 (0.02)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)	ND,D (0.31)	0.72 (0.056)	6.3 (0.057)	1 (0.02)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)	ND,D (0.31)	1.7 (0.056)	12 (0.057)	2.7 (0.02)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	ND (1)	ND (2)	ND (0.19)
Benzo(a)anthracene	430	--	3200	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	ND (1)	ND (2)	ND (0.19)
Benzo(a)pyrene	43	--	7.7	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	ND (1)	ND (2)	ND (0.19)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	ND (1)	ND (2)	ND (0.19)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	ND (1)	ND (2)	ND (0.19)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	ND (1)	ND (2)	ND (0.19)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	1.4 J (1)	2.8 J (2)	0.46 J (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	ND (1)	ND (2)	ND (0.19)
Naphthalene	41	0.54	6	27	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)	ND,D (0.31)	<u>1.3 (0.056)</u>	<u>13 (0.057)</u>	<u>2 (0.02)</u>
Phenanthrene	4600	--	14000	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	3.3 J (1)	5.9 J (2)	0.86 J (0.19)
Pyrene	4600	--	14000	--	ND (0.4)	ND (0.37)	ND (0.4)	ND (0.42)	ND (1)	ND (2)	0.2 J (0.19)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-880-12	PB-880-13	PB-880-14	PB-880-2	PB-880-3	PB-880-4	PB-880-5
Field Sample ID	Routine	Routine	Construction	Soil Migration	880-12	880-13	880-14	880-2	880-3	880-4	880-5
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		4/24/2004	4/24/2004	9/7/2004	4/8/2004	4/8/2004	4/8/2004	4/8/2004
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.034 J (0.028)	<u>8</u> (0.029)	0.014 (0.0021)	ND (0.012)	ND (0.013)	0.14 (0.013)	0.22 (0.013)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.069 J (0.056)	1.6 (0.057)	0.031 (0.0054)	ND (0.023)	ND (0.027)	0.27 (0.025)	0.49 (0.027)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	0.15 J (0.056)	3.3 (0.057)	ND (0.024)	ND (0.023)	ND (0.027)	0.66 (0.025)	1.3 (0.027)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.26 J (0.056)	24 (0.23)	0.037 (0.0021)	ND (0.023)	ND (0.027)	1.3 (0.025)	2.4 (0.027)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (2)	ND (2)	0.021 J (0.0036)	ND (0.039)	ND (0.41)	ND (0.2)	0.22 J (0.04)
Benzo(a)anthracene	430	--	3200	--	ND (2)	ND (2)	0.063 (0.0081)	ND (0.039)	ND (0.41)	ND (0.2)	0.16 J (0.04)
Benzo(a)pyrene	43	--	7.7	--	ND (2)	ND (2)	0.099 (0.012)	ND (0.039)	ND (0.41)	ND (0.2)	0.17 J (0.04)
Benzo(b)fluoranthene	430	--	3200	--	ND (2)	ND (2)	0.085 (0.016)	ND (0.039)	ND (0.41)	ND (0.2)	0.2 J (0.04)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (2)	ND (2)	0.1 (0.016)	ND (0.039)	ND (0.41)	ND (0.2)	0.1 J (0.04)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (2)	ND (2)	0.085 (0.012)	ND (0.039)	ND (0.41)	ND (0.2)	0.2 J (0.04)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (2)	ND (2)	0.026 J (0.024)	ND (0.039)	ND (0.41)	0.34 J (0.2)	0.57 (0.04)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (2)	ND (2)	ND (0.02)	ND (0.039)	ND (0.41)	ND (0.2)	0.1 J (0.04)
Naphthalene	41	0.54	6	27	0.41 (0.056)	<u>10</u> (0.057)	0.22 (0.011)	ND (0.023)	ND (0.027)	<u>1.1</u> (0.025)	<u>2.1</u> (0.027)
Phenanthrene	4600	--	14000	--	ND (2)	2 J (2)	0.16 (0.012)	ND (0.039)	ND (0.41)	0.59 J (0.2)	1.2 (0.04)
Pyrene	4600	--	14000	--	ND (2)	ND (2)	0.19 (0.028)	ND (0.039)	ND (0.41)	ND (0.2)	0.36 J (0.04)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-880-6	PB-880-7	PB-880-8	PB-880-9	PB-880-SURFACE	PB-881-1_2004	PB-881-1_2005
Field Sample ID	Routine	Routine	Construction	Soil Migration	880-6	880-7	880-8	880-9	880-Surface	881-1_07/22/2004	881-1_10/26/2005
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		4/8/2004	4/8/2004	4/8/2004	4/24/2004	4/8/2004	7/22/2004	10/26/2005
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.012)	0.018 J (0.012)	<u>0.58 (0.015)</u>	<u>3.1 (0.026)</u>	<u>36 (0.26)</u>	ND (0.0012)	ND (0.023)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.025)	ND (0.024)	0.39 (0.03)	4.6 (0.051)	<u>13 (0.52)</u>	ND (0.0031)	ND (0.045)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.025)	ND (0.024)	1.2 (0.03)	13 (0.051)	<u>41 (0.52)</u>	ND (0.0012)	ND (0.045)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.034 J (0.025)	0.03 J (0.024)	3.2 (0.03)	29 (0.26)	<u>140 (0.52)</u>	0.0024 J (0.0012)	ND (0.045)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.04)	ND (0.39)	0.74 J (0.44)	ND (2)	3.6 J (0.36)	0.019 (0.000011)	ND (0.037)
Benzo(a)anthracene	430	--	3200	--	ND (0.04)	ND (0.39)	0.52 J (0.44)	ND (2)	ND (0.36)	0.077 (0.0016)	0.2 (0.037)
Benzo(a)pyrene	43	--	7.7	--	ND (0.04)	ND (0.39)	0.59 J (0.44)	ND (2)	ND (0.36)	0.091 (0.0024)	ND (0.037)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.04)	ND (0.39)	0.68 J (0.44)	ND (2)	0.88 J (0.36)	0.067 (0.0031)	ND (0.037)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.04)	ND (0.39)	ND (0.44)	ND (2)	ND (0.36)	0.12 (0.0031)	ND (0.037)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.04)	ND (0.39)	1 J (0.44)	ND (2)	2.1 J (0.36)	0.075 (0.0024)	0.15 J (0.037)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.04)	ND (0.39)	1.9 J (0.44)	ND (2)	12 (0.36)	0.0057 J (0.0047)	0.069 J (0.037)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.04)	ND (0.39)	ND (0.44)	ND (2)	ND (0.36)	0.043 (0.0039)	ND (0.037)
Naphthalene	41	0.54	6	27	ND (0.025)	0.038 J (0.024)	<u>1.4 (0.03)</u>	<u>22 (0.26)</u>	<u>52 (0.52)</u>	ND (0.0061)	ND (0.045)
Phenanthrene	4600	--	14000	--	ND (0.04)	ND (0.39)	4.1 J (0.44)	4.1 J (2)	28 (0.36)	0.096 (0.000035)	0.13 J (0.037)
Pyrene	4600	--	14000	--	ND (0.04)	ND (0.39)	1.3 J (0.44)	ND (2)	3.1 J (0.36)	0.21 (0.0055)	0.11 J (0.037)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-881-2_2004	PB-881-2_2005	PB-881-3_2004	PB-881-3_2005	PB-881-4_2004	PB-881-4_2005	PB-881-5_2004
Field Sample ID	Routine	Routine	Construction	Soil Migration	881-2_07/22/2004	881-2_10/26/2005	881-3_07/22/2004	881-3_10/26/2005	881-4_07/22/2004	881-4_10/26/2005	881-5_07/22/2004
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		7/22/2004	10/26/2005	7/22/2004	10/26/2005	7/22/2004	10/26/2005	7/22/2004
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.011 (0.001)	ND (0.028)	ND (0.02)	ND (0.025)	ND (0.0011)	ND (0.027)	ND (0.18)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.084 (0.0026)	ND (0.056)	0.85 (0.049)	ND (0.051)	ND (0.0028)	ND (0.053)	5.8 (0.45)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	0.023 (0.001)	ND (0.056)	0.3 (0.02)	ND (0.051)	ND (0.0011)	ND (0.053)	ND (0.18)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.032 (0.001)	ND (0.056)	0.25 (0.02)	ND (0.051)	0.0027 J (0.0011)	ND (0.053)	1.7 (0.18)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.057 (0.0036)	ND (0.039)	0.17 J (0.033)	ND (0.039)	ND (0.035)	ND (0.041)	0.89 (0.065)
Benzo(a)anthracene	430	--	3200	--	0.018 J (0.0079)	0.046 J (0.039)	ND (0.073)	ND (0.039)	0.078 J (0.077)	0.058 J (0.041)	ND (0.14)
Benzo(a)pyrene	43	--	7.7	--	0.021 J (0.012)	0.06 J (0.039)	ND (0.11)	ND (0.039)	ND (0.12)	0.049 J (0.041)	ND (0.22)
Benzo(b)fluoranthene	430	--	3200	--	0.019 J (0.016)	0.042 J (0.039)	ND (0.15)	ND (0.039)	ND (0.15)	0.047 J (0.041)	ND (0.29)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.016)	0.065 J (0.039)	ND (0.15)	0.057 J (0.039)	ND (0.15)	ND (0.041)	ND (0.29)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.065 J (0.012)	0.14 J (0.039)	ND (0.74)	ND (0.039)	ND (0.12)	0.087 J (0.041)	ND (0.22)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.069 J (0.024)	ND (0.039)	0.24 J (0.22)	ND (0.039)	ND (0.23)	ND (0.041)	1.8 J (0.43)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.02)	ND (0.039)	ND (0.18)	0.052 J (0.039)	ND (0.19)	ND (0.041)	ND (0.36)
Naphthalene	41	0.54	6	27	ND (1.2)	ND (0.056)	<u>3.4 (0.098)</u>	ND (0.051)	0.013 (0.0055)	ND (0.053)	<u>3.1 (0.91)</u>
Phenanthrene	4600	--	14000	--	0.25 (0.012)	0.058 J (0.039)	0.61 J (0.11)	ND (0.039)	ND (0.12)	0.059 J (0.041)	4.2 (0.22)
Pyrene	4600	--	14000	--	0.12 J (0.028)	0.1 J (0.039)	0.39 J (0.26)	0.054 J (0.039)	ND (0.27)	0.098 J (0.041)	1.6 J (0.5)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-881-5_2005	PB-881-6_2004	PB-881-6_2005	PB-881-7_2004	PB-884-SS-1	PB-884-SS-2	PB-885-CS-10
Field Sample ID	Routine	Routine	Construction	Soil Migration	881-5_10/26/2005	881-6_07/22/2004	881-6_10/26/2005	881-7_07/22/2004	AST-884-SS-1	AST-884-SS-2	AST-885-CS-10
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		10/26/2005	7/22/2004	10/26/2005	7/22/2004	11/30/2006	11/30/2006	3/14/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.027)	ND (0.32)	ND (0.024)	ND (0.2)	ND (0.031)	0.055 J (0.029)	ND,D (0.09)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.054)	ND (0.81)	ND (0.047)	2.9 (0.5)	0.49 (0.063)	ND (0.059)	0.099 D (0.09)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.054)	ND (0.32)	ND (0.047)	ND (0.5)	0.74 (0.063)	ND (0.059)	ND,D (0.09)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.054)	ND (0.32)	ND (0.047)	0.33 J (0.2)	0.12 J (0.063)	ND (0.059)	ND,D (0.09)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	<u>6.4 (0.063)</u>	ND (0.059)	0.15 D (0.09)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.041)	0.36 J (0.064)	ND (0.039)	0.24 J (0.031)	0.045 J (0.043)	ND (0.04)	ND (0.4)
Benzo(a)anthracene	430	--	3200	--	ND (0.041)	ND (0.14)	0.044 J (0.039)	ND (0.069)	0.073 J (0.043)	0.14 J (0.04)	ND (0.4)
Benzo(a)pyrene	43	--	7.7	--	0.05 J (0.041)	ND (0.21)	0.058 J (0.039)	ND (0.1)	0.081 J (0.043)	0.14 J (0.04)	ND (0.4)
Benzo(b)fluoranthene	430	--	3200	--	0.061 J (0.041)	ND (0.29)	0.057 J (0.039)	ND (0.14)	0.088 J (0.043)	0.15 J (0.04)	ND (0.4)
Benzo(g,h,i)perylene	4600	--	14000	--	0.053 J (0.041)	ND (0.29)	0.078 J (0.039)	ND (0.14)	0.058 J (0.043)	0.096 J (0.04)	ND (0.4)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.051 J (0.041)	ND (0.21)	0.064 J (0.039)	ND (0.1)	0.1 J (0.043)	0.15 J (0.04)	ND (0.4)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.041)	ND (0.43)	ND (0.039)	0.49 J (0.21)	0.39 (0.043)	ND (0.04)	ND (0.4)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.041)	ND (0.36)	0.042 J (0.039)	ND (0.17)	0.047 J (0.043)	0.1 J (0.04)	ND (0.4)
Naphthalene	41	0.54	6	27	ND (0.054)	<u>20 (1.6)</u>	ND (0.047)	<u>18 (1)</u>	<u>2.7 (0.063)</u>	ND (0.059)	0.1 D (0.09)
Phenanthrene	4600	--	14000	--	ND (0.041)	0.66 J (0.21)	ND (0.039)	1.1 (0.1)	0.66 (0.043)	0.17 J (0.04)	ND (0.4)
Pyrene	4600	--	14000	--	0.081 J (0.041)	0.92 J (0.5)	0.082 J (0.039)	0.54 J (0.24)	0.11 J (0.043)	0.24 (0.04)	ND (0.4)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-885-CS-11	PB-885-CS-1	PB-885-CS-12	PB-885-CS-13	PB-885-CS-14	PB-885-CS-15	PB-885-CS-2
Field Sample ID	Routine	Routine	Construction	Soil Migration	AST-885-CS-11	AST-885-CS-1	AST-885-CS-12	AST-885-CS-13	AST-885-CS-14	AST-885-CS-15	AST-885-CS-2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.095)	ND,D (0.096)	ND,D (0.094)	ND,D (0.094)	ND,D (0.089)	ND,D (0.096)	<u>0.55 D (0.083)</u>
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.089 J,D (0.095)	0.054 J,D (0.096)	ND,D (0.094)	ND,D (0.094)	ND,D (0.089)	ND,D (0.096)	0.44 D (0.083)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND,D (0.095)	0.11 D (0.096)	ND,D (0.094)	ND,D (0.094)	ND,D (0.089)	ND,D (0.096)	1.6 D (0.083)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.095)	ND,D (0.096)	ND,D (0.094)	0.05 J,D (0.094)	ND,D (0.089)	ND,D (0.096)	1.1 D (0.083)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	ND,D (0.095)	<u>2.1 D (0.096)</u>	ND,D (0.094)	<u>1.9 D (0.094)</u>	ND,D (0.089)	ND,D (0.096)	<u>7.9 D (0.083)</u>
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.41)	ND (0.39)	ND (0.38)	ND (0.38)	ND (0.43)	0.45 (0.4)	ND (0.41)
Benzo(a)anthracene	430	--	3200	--	ND (0.41)	ND (0.39)	ND (0.38)	ND (0.38)	ND (0.43)	0.76 (0.4)	ND (0.41)
Benzo(a)pyrene	43	--	7.7	--	ND (0.41)	ND (0.39)	ND (0.38)	ND (0.38)	ND (0.43)	0.46 (0.4)	ND (0.41)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.41)	ND (0.39)	ND (0.38)	ND (0.38)	ND (0.43)	0.68 (0.4)	ND (0.41)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.41)	ND (0.39)	ND (0.38)	ND (0.38)	ND (0.43)	ND (0.4)	ND (0.41)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.41)	ND (0.39)	ND (0.38)	ND (0.38)	ND (0.43)	0.56 (0.4)	ND (0.41)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.41)	ND (0.39)	ND (0.38)	ND (0.38)	ND (0.43)	ND (0.4)	0.49 (0.41)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.41)	ND (0.39)	ND (0.38)	ND (0.38)	ND (0.43)	ND (0.4)	ND (0.41)
Naphthalene	41	0.54	6	27	ND,D (0.095)	0.52 D (0.096)	0.16 D (0.094)	0.48 D (0.094)	ND,D (0.089)	ND,D (0.096)	<u>1.4 D (0.083)</u>
Phenanthrene	4600	--	14000	--	ND (0.41)	0.6 (0.39)	0.5 (0.38)	1.2 (0.38)	ND (0.43)	1.6 (0.4)	0.61 (0.41)
Pyrene	4600	--	14000	--	ND (0.41)	ND (0.39)	ND (0.38)	ND (0.38)	ND (0.43)	1.1 (0.4)	ND (0.41)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-885-CS-3	PB-885-CS-4	PB-885-CS-5	PB-885-CS-6	PB-885-CS-7	PB-885-CS-8	PB-885-CS-9
Field Sample ID	Routine	Routine	Construction	Soil Migration	AST-885-CS-3	AST-885-CS-4	AST-885-CS-5	AST-885-CS-6	AST-885-CS-7	AST-885-CS-8	AST-885-CS-9
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.065 J,D (0.09)	0.19 D (0.081)	0.11 D (0.095)	ND,D (0.092)	ND,D (0.1)	ND,D (0.11)	ND,D (0.11)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.48 D (0.09)	1.1 D (0.081)	1.1 D (0.095)	ND,D (0.092)	0.35 D (0.1)	0.25 D (0.11)	0.11 J,D (0.11)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	0.44 D (0.09)	1.7 D (0.081)	1.8 D (0.095)	ND,D (0.092)	0.51 D (0.1)	0.34 D (0.11)	ND,D (0.11)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.61 D (0.09)	3.4 D (0.081)	3.3 D (0.095)	ND,D (0.092)	0.23 D (0.1)	0.1 J,D (0.11)	ND,D (0.11)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	<u>18 D (0.09)</u>	<u>21 D (0.081)</u>	<u>22 D (0.095)</u>	0.81 D (0.092)	<u>7.3 D (0.1)</u>	<u>3.1 D (0.11)</u>	1 D (0.11)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)
Benzo(a)anthracene	430	--	3200	--	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)
Benzo(a)pyrene	43	--	7.7	--	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	3.3 (0.38)	ND (0.38)	ND (0.38)	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)
Naphthalene	41	0.54	6	27	<u>4.1 D (0.09)</u>	<u>4.6 D (0.081)</u>	<u>4.3 D (0.095)</u>	0.19 D (0.092)	<u>1.2 D (0.1)</u>	<u>0.74 D (0.11)</u>	0.21 D (0.11)
Phenanthrene	4600	--	14000	--	3.9 (0.38)	ND (0.38)	2.5 (0.38)	0.72 (0.42)	ND (0.41)	1.9 (0.45)	1.2 (0.45)
Pyrene	4600	--	14000	--	ND (0.38)	ND (0.38)	ND (0.38)	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-885-SS-10	PB-885-SS-1	PB-885-SS-2	PB-885-SS-3	PB-885-SS-4	PB-885-SS-5	PB-885-SS-6
Field Sample ID	Routine	Routine	Construction	Soil Migration	AST-885-SS-10	AST-885-SS-1	AST-885-SS-2	AST-885-SS-3	AST-885-SS-4	AST-885-SS-5	AST-885-SS-6
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		11/30/2006	11/30/2006	11/30/2006	11/30/2006	11/30/2006	11/30/2006	11/30/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.11 J (0.034)	ND (0.028)	0.1 J (0.031)	ND (0.033)	0.068 J (0.026)	0.35 (0.031)	<u>2.6 (0.031)</u>
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	1.2 (0.068)	ND (0.057)	1.2 (0.063)	ND (0.065)	ND (0.052)	1.7 (0.061)	5.4 (0.061)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	2.2 (0.068)	ND (0.057)	2.1 (0.063)	ND (0.065)	ND (0.052)	3.4 (0.061)	13 (0.061)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.85 (0.068)	ND (0.057)	1.6 (0.063)	ND (0.065)	0.1 J (0.052)	3.3 (0.061)	26 (0.61)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	<u>17 (0.068)</u>	ND (0.057)	<u>21 (0.063)</u>	ND (0.065)	<u>4.4 (0.052)</u>	<u>27 (0.061)</u>	<u>97 (0.61)</u>
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.21)	ND (0.18)	ND (0.2)	ND (0.038)	ND (0.18)	ND (0.2)	ND (0.2)
Benzo(a)anthracene	430	--	3200	--	ND (0.21)	ND (0.18)	ND (0.2)	0.076 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)
Benzo(a)pyrene	43	--	7.7	--	ND (0.21)	ND (0.18)	ND (0.2)	0.069 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.21)	ND (0.18)	ND (0.2)	0.075 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.21)	ND (0.18)	ND (0.2)	0.046 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.21)	ND (0.18)	ND (0.2)	0.077 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	1.2 (0.21)	ND (0.18)	ND (0.2)	ND (0.038)	ND (0.18)	ND (0.2)	1.2 (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.21)	ND (0.18)	ND (0.2)	0.046 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)
Naphthalene	41	0.54	6	27	<u>6.5 (0.068)</u>	ND (0.057)	<u>4.8 (0.063)</u>	ND (0.065)	0.11 J (0.052)	<u>5.6 (0.061)</u>	<u>15 (0.061)</u>
Phenanthrene	4600	--	14000	--	2 (0.21)	ND (0.18)	0.88 J (0.2)	0.12 J (0.038)	0.5 J (0.18)	1.5 (0.2)	2 (0.2)
Pyrene	4600	--	14000	--	ND (0.21)	0.18 J (0.18)	ND (0.2)	0.092 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					PB-885-SS-7	PB-885-SS-8	PB-885-SS-9	S-119D	S-216	S-218D	S-218D
Field Sample ID	Routine	Routine	Construction	Soil Migration	AST-885-SS-7	AST-885-SS-8	AST-885-SS-9	BHS119D-040105-1-1.5	BH-S216-032505-1-1.5	AOI4-S218D-6-6.5-20160114	AOI4-S218D-0.5-1.0-20160205
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	1 - 1.5	1 - 1.5	6 - 6.5	0.5 - 1
Sample Date	Direct Contact		Direct Contact		11/30/2006	11/30/2006	11/30/2006	4/1/2005	3/25/2005	1/14/2016	2/5/2016
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.16 J (0.031)	ND (0.035)	ND (0.029)	ND (0.005)	ND (0.005)	0.0114 (0.00053)	ND (0.00055)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	2.9 (0.061)	ND (0.069)	0.11 J (0.059)	ND (0.005)	ND (0.005)	0.088 (0.0021)	ND (0.0022)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	2.4 (0.061)	ND (0.069)	ND (0.059)	ND (0.005)	ND (0.005)	0.207 (0.12)	ND (0.0011)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	ND (0.005)	ND (0.005)	ND (0.0011)	ND (0.0011)
Toluene	8000	76	650	9800	3.4 (0.061)	ND (0.069)	ND (0.059)	ND (0.005)	ND (0.005)	0.0234 (0.0011)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	<u>1.17 (0.24)</u>	ND (0.0022)
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	0.434 (0.24)	ND (0.0022)
Xylenes (total)	240	1.5	51	340	<u>66 (0.61)</u>	ND (0.069)	<u>1.8 (0.059)</u>	ND (0.005)	ND (0.005)	0.418 (0.12)	ND (0.0011)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.2)	ND (0.2)	0.2 J (0.2)	ND (0.38)	ND (0.38)	ND (0.038)	0.0207 J (0.039)
Benzo(a)anthracene	430	--	3200	--	0.22 J (0.2)	ND (0.2)	0.49 J (0.2)	ND (0.38)	ND (0.38)	ND (0.038)	0.0748 (0.039)
Benzo(a)pyrene	43	--	7.7	--	ND (0.2)	0.22 J (0.2)	0.36 J (0.2)	ND (0.38)	ND (0.38)	ND (0.038)	0.0952 (0.039)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.2)	0.24 J (0.2)	0.46 J (0.2)	ND (0.38)	ND (0.38)	ND (0.038)	0.106 (0.039)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.2)	ND (0.2)	0.26 J (0.2)	ND (0.38)	ND (0.38)	ND (0.038)	0.0794 (0.039)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.22 J (0.2)	ND (0.2)	0.55 J (0.2)	ND (0.38)	ND (0.38)	ND (0.038)	0.0966 (0.039)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	1.2 (0.2)	ND (0.2)	0.47 J (0.2)	ND (0.38)	ND (0.38)	0.231 (0.038)	ND (0.039)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.2)	ND (0.2)	0.3 J (0.2)	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	<u>11 (0.061)</u>	ND (0.069)	<u>0.55 (0.059)</u>	ND (0.38)	ND (0.38)	<u>2.44 (0.038)</u>	0.0317 J (0.039)
Phenanthrene	4600	--	14000	--	2.3 (0.2)	ND (0.2)	1.4 (0.2)	ND (0.38)	ND (0.38)	0.371 (0.038)	0.11 (0.039)
Pyrene	4600	--	14000	--	ND (0.2)	0.24 J (0.2)	0.82 J (0.2)	ND (0.38)	ND (0.38)	0.022 J (0.038)	0.127 (0.039)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	24.9 (2.24)	60.8 (2.26)	13.3 (2.2)	500 (2.4)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					S-219	S-229	S-282	S-364	S-364	S-364	S-364	S-365
Field Sample ID	Routine	Routine	Construction	Soil Migration	BH-S219-032505-1-1.5	BH-S229-032505-1.5-2	S-282_1-2	AOI4_S-364_5-1_30413	AOI4_S-364_4-5_30413	S-364 @ 19' 031913	S-365_0-2'	
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	1 - 1.5	1.5 - 2	1 - 2	0.5 - 1	4 - 5	18.5 - 19	0 - 2	
Sample Date	Direct Contact		Direct Contact		3/25/2005	3/25/2005	4/27/2010	3/4/2013	3/4/2013	3/19/2013	3/4/2013	
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	ND (0.005)	ND (0.005)	ND (0.004)	ND (0.00074)	0.189 J (0.21)	0.241 (0.1)	ND (0.00055)	
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Cumene	1000	6.1	87	1000	ND (0.005)	ND (0.005)	ND (0.004)	ND (0.0037)	0.755 J (1)	2.36 (0.5)	ND (0.0028)	
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Ethyl Benzene	2300	15	1300	820	ND (0.005)	ND (0.005)	ND (0.004)	ND (0.00074)	1.43 (0.21)	0.14 (0.1)	ND (0.00055)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.005)	0.014 (0.005)	ND (0.004)	ND (0.00074)	ND (0.21)	ND (0.1)	ND (0.00055)	
Toluene	8000	76	650	9800	ND (0.005)	ND (0.005)	ND (0.004)	ND (0.00074)	ND (0.21)	ND (0.1)	ND (0.00055)	
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	ND (0.004)	ND (0.0037)	<u>4.3 (1)</u>	ND (0.5)	ND (0.0028)	
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	ND (0.004)	ND (0.0037)	<u>1.88 (1)</u>	ND (0.5)	ND (0.0028)	
Xylenes (total)	240	1.5	51	340	ND (0.005)	ND (0.005)	ND (0.004)	ND (0.00074)	<u>2.25 (0.21)</u>	0.222 (0.1)	ND (0.00055)	
Semivolatile Organic Compounds												
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA	
Anthracene	46000	--	46000	--	ND (0.4)	ND (0.37)	ND (0.2)	ND (0.035)	ND (0.041)	ND (0.039)	ND (0.033)	
Benzo(a)anthracene	430	--	3200	--	ND (0.4)	ND (0.37)	ND (0.2)	ND (0.035)	ND (0.041)	ND (0.039)	0.02 J (0.033)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.4)	ND (0.37)	ND (0.2)	ND (0.035)	ND (0.041)	ND (0.039)	0.0242 J (0.033)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.4)	ND (0.37)	ND (0.2)	ND (0.035)	ND (0.041)	ND (0.039)	0.035 (0.033)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.4)	ND (0.37)	ND (0.2)	ND (0.035)	ND (0.041)	ND (0.039)	0.0292 J (0.033)	
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA	
Chrysene	43000	--	320000	--	ND (0.4)	ND (0.37)	ND (0.2)	ND (0.035)	ND (0.041)	ND (0.039)	0.0279 J (0.033)	
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Fluorene	6200	--	18000	--	ND (0.4)	ND (0.37)	ND (0.2)	ND (0.035)	ND (0.041)	0.0934 (0.039)	ND (0.033)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.4)	ND (0.37)	ND (0.2)	ND (0.035)	ND (0.041)	ND (0.039)	ND (0.033)	
Phenanthrene	4600	--	14000	--	ND (0.4)	ND (0.37)	ND (0.2)	ND (0.035)	0.0402 J (0.041)	0.172 (0.039)	ND (0.033)	
Pyrene	4600	--	14000	--	ND (0.4)	ND (0.37)	ND (0.2)	0.0237 J (0.035)	0.0243 J (0.041)	0.0583 (0.039)	0.0295 J (0.033)	
Metals												
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Lead	2240	--	2240	45000	8.99 (2.37)	16.7 (2.16)	87.3 (0.229)	13 (2.3)	15.2 (2.3)	18.5 (2)	79.1 (2.2)	
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA	
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA	
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					S-365	S-365	S-366	S-366	S-366	S-367	S-367
Field Sample ID	Routine	Routine	Construction	Soil Migration	S-365_4-6'	S-365 @ 12'-14'_031813	AOI4_S-366_0-1_30513	AOI4_S-366_4.5-5.5_30513	S-366@14-16_031513	S-367_0-2'	S-367@14'_031313
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	4 - 6	12 - 14	0 - 1	4.5 - 5.5	14 - 16	0 - 2	13.5 - 14
Sample Date	Direct Contact		Direct Contact		3/4/2013	3/18/2013	3/5/2013	3/5/2013	3/15/2013	3/5/2013	3/13/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.0269 (0.00057)	0.0004 J (0.0011)	ND (0.0009)	ND (0.0011)	0.00041 J (0.0011)	ND (0.00055)	0.00054 J (0.0012)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.0063 (0.0028)	ND (0.0053)	ND (0.0045)	ND (0.0053)	ND (0.0056)	0.0135 (0.0028)	0.017 (0.0058)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	0.0085 (0.00057)	ND (0.0011)	ND (0.0009)	ND (0.0011)	ND (0.0011)	0.00081 (0.00055)	ND (0.0012)
Methyl tert-butyl ether	2400	16	390	5900	0.00024 J (0.00057)	ND (0.0011)	ND (0.0009)	ND (0.0011)	ND (0.0011)	ND (0.00055)	ND (0.0012)
Toluene	8000	76	650	9800	0.0025 (0.00057)	ND (0.0011)	ND (0.0009)	ND (0.0011)	ND (0.0011)	0.00067 (0.00055)	ND (0.0012)
1,2,4-Trimethylbenzene	180	0.92	70	250	0.0025 J (0.0028)	ND (0.0053)	ND (0.0045)	ND (0.0053)	ND (0.0056)	0.00059 J (0.0028)	ND (0.0058)
1,3,5-Trimethylbenzene	220	0.92	99	240	0.0027 J (0.0028)	ND (0.0053)	ND (0.0045)	ND (0.0053)	ND (0.0056)	0.00027 J (0.0028)	ND (0.0058)
Xylenes (total)	240	1.5	51	340	0.0098 (0.00057)	ND (0.0011)	ND (0.0009)	ND (0.0011)	ND (0.0011)	0.005 (0.00055)	ND (0.0012)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.356 (0.039)	ND (0.034)	ND (0.035)	ND (0.04)	ND (0.1)	0.209 (0.036)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	0.841 (0.039)	ND (0.034)	0.0154 J (0.035)	ND (0.04)	ND (0.1)	0.468 (0.036)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	0.825 (0.039)	ND (0.034)	0.0169 J (0.035)	ND (0.04)	ND (0.1)	0.402 (0.036)	ND (0.1)
Benzo(b)fluoranthene	430	--	3200	--	0.802 (0.039)	ND (0.034)	0.0177 J (0.035)	ND (0.04)	ND (0.1)	0.409 (0.036)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	0.545 (0.039)	ND (0.034)	0.0212 J (0.035)	ND (0.04)	ND (0.1)	0.346 (0.036)	ND (0.1)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.983 (0.039)	ND (0.034)	0.0139 J (0.035)	ND (0.04)	ND (0.1)	0.729 (0.036)	ND (0.1)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.386 (0.039)	ND (0.034)	ND (0.035)	ND (0.04)	ND (0.1)	0.394 (0.036)	ND (0.1)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.314 (0.039)	ND (0.034)	ND (0.035)	ND (0.04)	ND (0.1)	ND (0.036)	ND (0.1)
Phenanthrene	4600	--	14000	--	2.18 (0.039)	ND (0.034)	ND (0.035)	ND (0.04)	ND (0.1)	0.839 (0.036)	ND (0.1)
Pyrene	4600	--	14000	--	1.97 (0.039)	ND (0.034)	ND (0.035)	ND (0.04)	ND (0.1)	1.04 (0.036)	ND (0.1)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	222 (2.3)	4.2 (2.2)	14.2 (11)	10.9 (2.7)	4.3 (0.99)	258 (2.3)	2.6 (1)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					S-367	S-373	S-379	S-379	S-379	S-381	S-381
Field Sample ID	Routine	Routine	Construction	Soil Migration	S-367_031313@6'	AOI4-S-373_4-6'	S-379_0-2'	S-379_4-5'	S-379_8-9'	AOI4-S-381_0-5_31513	AOI4-S-381_2-3_31513
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	4 - 6	0 - 2	4 - 5	8 - 9	0 - 0.5	2 - 3
Sample Date	Direct Contact		Direct Contact		3/13/2013	3/19/2013	2/28/2013	2/28/2013	2/28/2013	3/15/2013	3/15/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.095)	<u>1.25</u> (0.11)	ND (0.00088)	0.00024 J (0.00089)	ND (0.00045)	ND (0.001)	0.242 J (0.59)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.431 J (0.47)	0.718 (0.54)	ND (0.0044)	ND (0.0044)	ND (0.0022)	ND (0.0051)	1.97 J (2.9)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.095)	2.12 (0.11)	ND (0.00088)	ND (0.00089)	ND (0.00045)	ND (0.001)	5.54 (0.59)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.095)	ND (0.11)	ND (0.00088)	ND (0.00089)	ND (0.00045)	ND (0.001)	ND (0.59)
Toluene	8000	76	650	9800	ND (0.095)	0.339 (0.11)	ND (0.00088)	ND (0.00089)	ND (0.00045)	ND (0.001)	0.419 J (0.59)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.47)	<u>2.56</u> (0.54)	ND (0.0044)	ND (0.0044)	ND (0.0022)	ND (0.0051)	<u>29.9</u> (2.9)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.47)	<u>2.88</u> (0.54)	ND (0.0044)	ND (0.0044)	ND (0.0022)	ND (0.0051)	<u>11.9</u> (2.9)
Xylenes (total)	240	1.5	51	340	ND (0.095)	<u>3.76</u> (0.11)	ND (0.00088)	ND (0.00089)	ND (0.00045)	ND (0.001)	<u>17.7</u> (0.59)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.039)	ND (0.035)	0.0977 (0.036)	ND (0.041)	0.0439 J (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.039)	ND (0.035)	0.223 (0.036)	ND (0.041)	0.143 (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.11)	ND (0.039)	ND (0.035)	0.194 (0.036)	ND (0.041)	0.0854 J (0.12)	ND (0.12)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.039)	ND (0.035)	0.225 (0.036)	ND (0.041)	0.143 (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.11)	ND (0.039)	ND (0.035)	0.12 (0.036)	ND (0.041)	0.0814 J (0.12)	ND (0.12)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.039)	ND (0.035)	0.229 (0.036)	ND (0.041)	0.158 (0.12)	ND (0.12)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.11)	0.221 (0.039)	ND (0.035)	0.043 (0.036)	ND (0.041)	ND (0.12)	ND (0.12)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.11)	0.362 (0.039)	ND (0.035)	0.0194 J (0.036)	ND (0.041)	ND (0.12)	<u>1.18</u> (0.12)
Phenanthrene	4600	--	14000	--	ND (0.11)	0.59 (0.039)	ND (0.035)	0.296 (0.036)	ND (0.041)	0.598 (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.039)	ND (0.035)	0.351 (0.036)	ND (0.041)	0.381 (0.12)	ND (0.12)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	6.3 (1)	8.5 (1.9)	1.5 J (2.2)	206 (2.4)	10 (2.4)	25800 (110)	2650 (5.6)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location					S-381	S-381	S-39D	S-39D	S-415	S-415	S-416
Field Sample ID	Routine	Routine	Construction	Soil Migration	S-381 @ 12' _04242013	S-381 @ 24' _04252013	AOI4-S-39D-1.5-2-20160121	AOI4-S39D-7.5-8.0-20160208	AOI4_S-415_0-2_101215	AOI4_S-415_16-18_101215	AOI4-S-416-0-2-20160620
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	11.5 - 12	23.5 - 24	1.5 - 2	7.5 - 8	0 - 2	16 - 18	0 - 2
Sample Date	Direct Contact		Direct Contact		4/24/2013	4/24/2013	1/21/2016	2/8/2016	10/12/2015	10/12/2015	6/20/2016
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.0403 (0.00089)	<u>1.11</u> (0.5)	ND (0.00065)	ND (0.00068)	0.0013 (0.00052)	ND (0.25)	0.00315 (0.00118)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.00118)
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.00118)
Cumene	1000	6.1	87	1000	0.0033 J (0.0045)	<u>11.7</u> (2.5)	ND (0.0026)	ND (0.0027)	ND (0.0021)	5.65 (1)	ND (0.0118)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.00118)
Ethyl Benzene	2300	15	1300	820	0.0021 (0.00089)	0.439 J (0.5)	ND (0.0013)	ND (0.0014)	ND (0.001)	ND (0.51)	ND (0.00118)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00089)	ND (0.5)	ND (0.0013)	ND (0.0014)	ND (0.001)	ND (0.51)	ND (0.00118)
Toluene	8000	76	650	9800	0.0076 (0.00089)	0.2 J (0.5)	ND (0.0013)	ND (0.0014)	0.00035 J (0.001)	ND (0.51)	ND (0.00591)
1,2,4-Trimethylbenzene	180	0.92	70	250	0.0032 J (0.0045)	0.518 J (2.5)	ND (0.0026)	ND (0.0027)	ND (0.0021)	ND (1)	ND (0.00118)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0045)	0.543 J (2.5)	ND (0.0026)	ND (0.0027)	ND (0.0021)	ND (1)	ND (0.00118)
Xylenes (total)	240	1.5	51	340	0.0056 (0.00089)	1.01 (0.5)	ND (0.0013)	ND (0.0014)	0.0007 J (0.001)	ND (0.51)	ND (0.00355)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	ND (0.039)
Anthracene	46000	--	46000	--	ND (0.11)	1.79 (0.12)	ND (0.035)	ND (0.034)	0.0698 (0.037)	0.156 (0.035)	ND (0.039)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.12)	ND (0.035)	ND (0.034)	0.249 (0.037)	0.0595 (0.035)	ND (0.039)
Benzo(a)pyrene	43	--	7.7	--	ND (0.11)	ND (0.12)	ND (0.035)	ND (0.034)	0.316 (0.037)	0.0379 (0.035)	ND (0.039)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.12)	ND (0.035)	ND (0.034)	0.395 (0.037)	0.0258 J (0.035)	0.0446 (0.039)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.11)	ND (0.12)	ND (0.035)	ND (0.034)	0.228 (0.037)	0.0143 J (0.035)	ND (0.039)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	ND (0.039)
Chrysene	43000	--	320000	--	ND (0.11)	0.0624 J (0.12)	ND (0.035)	ND (0.034)	0.245 (0.037)	0.0736 (0.035)	ND (0.039)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	0.0419 (0.039)
Fluorene	6200	--	18000	--	ND (0.11)	5.02 (0.12)	ND (0.035)	ND (0.034)	0.0196 J (0.037)	0.536 (0.035)	ND (0.039)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	ND (0.039)
Naphthalene	41	0.54	6	27	ND (0.11)	<u>5.48</u> (0.12)	ND (0.035)	ND (0.034)	0.0651 (0.037)	ND (0.035)	ND (0.039)
Phenanthrene	4600	--	14000	--	ND (0.11)	13 (0.58)	ND (0.035)	ND (0.034)	0.254 (0.037)	1.04 (0.035)	ND (0.039)
Pyrene	4600	--	14000	--	ND (0.11)	1.11 (0.12)	ND (0.035)	ND (0.034)	0.329 (0.037)	0.143 (0.035)	ND (0.039)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	6.02 (1.18)
Lead	2240	--	2240	45000	8.5 (0.9)	5.6 (0.9)	49.5 (6.6)	5.2 (2.1)	241 (2.2)	3.9 (2.1)	86.2 (0.591)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	20.9 (2.37)
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	46.4 (2.37)
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	175 (5.91)

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 3

Summary of Historical Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location						S-416
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-S-416-14-15-20160711	
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW		14 - 15
Sample Date	Direct Contact		Direct Contact			7/11/2016
Comments						
Volatile Organic Compounds						
Benzene	63	0.46	8.7	98	ND (0.00112)	
sec-Butylbenzene	--	--	--	--	ND (0.00112)	
tert-Butylbenzene	--	--	--	--	ND (0.00112)	
Cumene	1000	6.1	87	1000	ND (0.0112)	
Cyclohexane	--	--	--	--	0.00791 (0.00112)	
Ethyl Benzene	2300	15	1300	820	ND (0.00112)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00112)	
Toluene	8000	76	650	9800	ND (0.00562)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.00112)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.00112)	
Xylenes (total)	240	1.5	51	340	ND (0.00337)	
Semivolatile Organic Compounds						
Acenaphthene	9300	--	9200	--	ND (0.0371)	
Anthracene	46000	--	46000	--	0.0505 (0.0371)	
Benzo(a)anthracene	430	--	3200	--	0.137 (0.0371)	
Benzo(a)pyrene	43	--	7.7	--	0.104 (0.0371)	
Benzo(b)fluoranthene	430	--	3200	--	0.13 (0.0371)	
Benzo(g,h,i)perylene	4600	--	14000	--	0.0548 (0.0371)	
Benzo(k)fluoranthene	4300	--	32000	--	0.0489 (0.0371)	
Chrysene	43000	--	320000	--	0.118 (0.0371)	
Fluoranthene	--	--	--	--	0.252 OE (0.0371)	
Fluorene	6200	--	18000	--	ND (0.0371)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.0516 (0.0371)	
Naphthalene	41	0.54	6	27	ND (0.0371)	
Phenanthrene	4600	--	14000	--	0.164 (0.0371)	
Pyrene	4600	--	14000	--	0.219 (0.0371)	
Metals						
Cobalt	--	--	--	--	5.04 (1.12)	
Lead	2240	--	2240	45000	63.5 (0.562)	
Nickel	6200	--	700	1700	11.3 (2.25)	
Vanadium	1600	--	350	2800	26.3 (2.25)	
Zinc	--	--	--	--	60.7 (5.62)	

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	MW-1	MW-1	MW-4	S-103	S-119	S-119	S-119
Field Sample ID	MW1-050605	MW-4_06_17_2013	MW4-050605	S-103-20161012-WG	S-119	S119-050305	S-119_06_12_2013
Collection Depth (ft bgs)	5/6/2005	6/17/2013	5/6/2005	10/12/2016	10/20/2004	5/3/2005	6/12/2013
Sample Date							
Comments							
Nonpotable GW Use	Construction Worker GW Direct Contact	Routine Worker GW VI	Off-Site Resident GW VI	GW Migration to SW			
Routine Worker GW Vol to Outdoor Air							
Physical Parameters							
pH [SU]	--	--	--	--	--	--	--
Volatile Organic Compounds							
Benzene	0.3	550	3.8	4	0.25	130	0.1 (0.005) 0.128 MS (0.001) ND (0.005) ND,SL (0.01) ND (0.001) 0.005 (0.005) ND (0.001)
sec-Butylbenzene	--	--	--	--	--	--	NA NA NA ND,SL (0.01) NA NA NA
tert-Butylbenzene	--	--	--	--	--	--	NA NA NA ND,SL (0.01) NA NA NA
Cumene	37	9100	63	30	4	2.6	0.01 (0.005) 0.0035 MS (0.002) ND (0.005) 0.0235 SL (0.01) ND (0.005) ND (0.005) ND (0.002)
Cyclohexane	--	--	--	--	--	--	NA NA NA ND,SL (0.01) NA NA NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000028) ND,MS (0.00002) ND (0.000028) ND,SL (0.00001) ND (0.00002) ND (0.000028) ND (0.00002)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005) ND,MS (0.001) ND (0.005) ND,SL (0.01) ND (0.005) ND (0.005) ND (0.001)
Ethyl Benzene	2	22000	150	40	9.7	13	0.019 (0.005) 0.00091 J,MS (0.001) ND (0.005) ND,SL (0.01) ND (0.005) ND (0.005) ND (0.001)
Hexane	--	--	--	--	--	--	NA NA NA ND,SL (0.01) NA NA NA
2-Hexanone	--	--	--	--	--	--	NA NA NA NA NA NA NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005) 0.0112 MS (0.001) ND (0.005) ND,SL (0.01) ND (0.005) ND (0.005) ND (0.001)
tert Butyl alcohol	--	--	--	--	--	--	NA NA NA NA NA NA NA
Toluene	25	100000	700	200	45	52	0.01 (0.005) 0.0101 MS (0.001) ND (0.005) ND,SL (0.05) ND (0.005) ND (0.005) ND (0.001)
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA 0.0015 J,MS (0.002) NA ND,SL (0.01) NA NA ND (0.002)
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA 0.0037 MS (0.002) NA ND,SL (0.01) NA NA ND (0.002)
Xylenes (total)	3.7	1900	13	17	0.86	210	0.027 (0.005) 0.0081 MS (0.001) ND (0.005) ND,SL (0.03) ND (0.01) ND (0.005) ND (0.001)
Semivolatile Organic Compounds							
Acenaphthene	57	--	--	3900	--	9	NA NA NA 0.00449 SL (0.0005) NA NA NA
Anthracene	240	--	--	19000	--	40	NA ND,MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA 0.00244 MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA 0.00245 MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA 0.00248 MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA 0.00183 MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA NA NA ND,SL (0.0005) NA NA NA
1,1-Biphenyl	--	--	--	--	--	--	NA NA NA ND,SL (0.2) NA NA NA
Chrysene	16	--	--	140000	--	1.3	ND (0.01) 0.00294 MS (0.00011) ND (0.01) ND,SL (0.0005) ND (0.00014) ND (0.01) ND (0.0001)
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA NA NA ND,SL (0.0005) NA NA NA
Fluoranthene	--	--	--	--	--	--	NA NA NA 0.000579 SL (0.0005) NA NA NA
Fluorene	97	--	--	7800	--	7	ND (0.01) ND,MS (0.00011) ND (0.01) 0.00518 SL (0.0005) ND (0.01) ND (0.01) ND (0.0001)
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA NA NA ND,SL (0.0005) NA NA NA
2-Methylnaphthalene	--	--	--	--	--	--	NA NA NA 0.0101 SL (0.0025) NA NA NA
3&4-Methylphenol	--	--	--	--	--	--	NA NA NA ND,SL (0.2) NA NA NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.032 (0.01) 0.0277 MS (0.0011) ND (0.01) 0.00329 B,SL (0.0025) ND (0.005) ND (0.01) ND (0.0001)
Phenanthrene	73	--	--	5800	--	1	ND (0.01) 0.00454 MS (0.00011) ND (0.01) 0.0101 SL (0.0005) ND (0.01) ND (0.01) ND (0.0001)
Phenol	--	--	--	--	--	--	NA NA NA ND,SL (0.2) NA NA NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA NA NA ND,SL (0.06) NA NA NA
Pyrene	50	--	--	5800	--	3	ND (0.01) 0.00372 MS (0.00011) ND (0.01) 0.00228 SL (0.0005) ND (0.01) ND (0.01) ND (0.0001)
Perfluoroalkyl and Polyfluoroalkyl Substances							
Perfluorooctanoic Acid	--	--	--	--	--	--	NA NA NA NA NA NA NA

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	MW-1	MW-1	MW-4	S-103	S-119	S-119	S-119
Field Sample ID	MW1-050605	MW-4_06_17_2013	MW4-050605	S-103-20161012-WG	S-119	S119-050305	S-119_06_12_2013
Collection Depth (ft bgs)	5/6/2005	6/17/2013	5/6/2005	10/12/2016	10/20/2004	5/3/2005	6/12/2013
Sample Date							
Comments							
Nonpotable GW Use							
Routine Worker GW Vol to Outdoor Air							
Routine Worker GW VI							
Construction Worker GW Direct Contact							
Off-Site Resident GW VI							
GW Migration to SW							
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	ND (0.001)
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	NA
Vanadium	0.14	--	--	6.9	--	100	NA
Zinc	--	--	--	--	--	--	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-119	S-119	S-119D	S-119D	S-119D	S-119D	S-119D
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-119-20160812-WG	S-119-20161010-WG	S119D-050305	S-119D_04062011	D_04062011 FILTERED	S-119D_06282011	D_06282011 FILTERED	S-119D
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW								
Sample Date		Vol to		Direct Contact	VI		8/12/2016	10/10/2016	5/3/2005	4/6/2011	4/6/2011	6/28/2011	6/28/2011	
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	0.00283 (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	NA
sec-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA	NA
Cumene	37	9100	63	30	4	2.6	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.002)	NA	ND (0.002)	NA	NA
Cyclohexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.000029)	ND (0.000029)	NA	ND (0.000029)	NA	NA
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	NA
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	NA
Hexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA	NA
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	ND (0.001)	ND (0.005)	0.0005 J (0.001)	NA	0.0006 J (0.001)	NA	NA
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	NA
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.001)	ND (0.001)	NA	ND (0.002)	NA	ND (0.002)	NA	NA
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.001)	ND (0.001)	NA	ND (0.002)	NA	ND (0.002)	NA	NA
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.003)	ND (0.003)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	NA
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Anthracene	240	--	--	19000	--	40	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA	NA
Chrysene	16	--	--	140000	--	1.3	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	--	--	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Fluorene	97	--	--	7800	--	7	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	--	--	--	--	--	ND (0.00025)	ND (0.00025)	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA	NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.00025)	ND (0.00025)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Phenanthrene	73	--	--	5800	--	1	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Phenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	NA	NA	NA	NA	NA	NA
Pyrene	50	--	--	5800	--	3	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-119	S-119	S-119D	S-119D	S-119D	S-119D	S-119D						
Field Sample ID	S-119-20160812-WG	S-119-20161010-WG	S119D-050305	S-119D_04062011	D_04062011 FILTERED	S-119D_06282011	D_06282011 FILTERED						
Collection Depth (ft bgs)	8/12/2016	10/10/2016	5/3/2005	4/6/2011	4/6/2011	6/28/2011	6/28/2011						
Sample Date													
Comments													
Nonpotable GW Use	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW										
Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI												
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	0.0051 (0.002)	NA	0.005 (0.002)	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	0.0079 (0.005)	NA	0.0075 (0.005)	NA
Lead	--	--	--	--	--	2.5	NA	NA	ND (0.001)	0.0012 (0.001)	NA	0.001 (0.001)	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	0.287 (0.005)	NA	0.286 (0.005)	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	0.0046 (0.002)	NA	0.0046 (0.002)
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	0.00415 (0.002)	0.00365 (0.002)	NA	NA	0.0074 (0.005)	NA	0.0066 (0.005)
Lead	--	--	--	--	--	2.5	ND (0.002)	ND (0.002)	NA	NA	ND (0.001)	NA	ND (0.001)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	0.282 (0.005)	NA	0.277 (0.005)
Nickel	1.3	--	--	86	--	52	0.00305 (0.002)	0.00262 B (0.002)	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)	ND (0.005)	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--	0.04 (0.025)	ND (0.025)	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-119D	S-119D	S-119D	S-119D	S-119D	S-119D	S-120
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-119D_52312	S-119D_081612	S-119D_102512	S-119D_032613	S-119D-20160819-WG	S-119D-20161011-WG	S-120~10/20/2004	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW								
Sample Date		Vol to		Direct Contact	VI		5/23/2012	8/16/2012	10/25/2012	3/26/2013	8/19/2016	10/11/2016	10/20/2004	
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.0022 (0.001)	ND (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
Cumene	37	9100	63	30	4	2.6	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	ND (0.005)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.000029)	ND (0.00002)	ND (0.00002)	ND (0.00001)	ND (0.00001)	ND (0.00002)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	0.0005 J (0.001)	ND (0.001)	0.00043 J (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	NA	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	NA	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.01)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Anthracene	240	--	--	19000	--	40	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00014)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Fluorene	97	--	--	7800	--	7	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.01)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.00025)	ND (0.00025)	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.0002 J (0.0005)	0.0001 J (0.0005)	ND (0.005)	ND (0.0001)	ND (0.00025)	ND (0.00025)	ND (0.005)	
Phenanthrene	73	--	--	5800	--	1	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.01)	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.003)	ND (0.003)	NA	
Pyrene	50	--	--	5800	--	3	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.01)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-119D	S-119D	S-119D	S-119D	S-119D	S-119D	S-120					
Field Sample ID	S-119D_52312	S-119D_081612	S-119D_102512	S-119D_032613	S-119D-20160819-WG	S-119D-20161011-WG	S-120~10/20/2004					
Collection Depth (ft bgs)	5/23/2012	8/16/2012	10/25/2012	3/26/2013	8/19/2016	10/11/2016	10/20/2004					
Sample Date												
Comments												
Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW							
Metals												
Arsenic	0.021	--	--	53	1.4	0.004 (0.002)	0.0042 (0.002)	0.0033 (0.003)	0.0034 (0.003)	NA	NA	NA
Cobalt	--	--	--	--	--	0.0068 (0.005)	0.0072 (0.005)	ND (0.05)	0.006 J (0.05)	NA	NA	NA
Lead	--	--	--	--	2.5	0.00028 J (0.001)	0.00063 J (0.001)	0.0048 (0.003)	ND (0.003)	NA	NA	NA
Manganese	--	--	--	--	--	0.259 (0.005)	0.255 (0.005)	0.256 (0.015)	0.268 (0.015)	NA	NA	NA
Mercury	--	--	--	--	--	NA	0.000057 J (0.0002)	ND (0.0002)	ND (0.0002)	NA	NA	NA
Arsenic	0.021	--	--	53	1.4	ND (0.002)	0.0029 (0.002)	0.0036 (0.003)	0.0021 J (0.003)	NA	NA	NA
Barium	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	0.0063 (0.005)	0.0068 (0.005)	ND (0.05)	0.0057 J (0.05)	ND (0.002)	0.00574 (0.002)	NA
Lead	--	--	--	--	2.5	ND (0.001)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.005)
Manganese	--	--	--	--	--	0.253 (0.005)	0.251 (0.005)	0.283 (0.015)	0.277 (0.015)	NA	NA	NA
Nickel	1.3	--	--	86	52	NA	NA	NA	NA	0.00466 B (0.002)	0.00501 B (0.002)	NA
Vanadium	0.14	--	--	6.9	100	NA	NA	NA	NA	ND (0.005)	ND (0.005)	NA
Zinc	--	--	--	--	--	NA	NA	NA	NA	0.0412 (0.025)	ND (0.025)	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-120	S-120	S-120	S-120	S-120	S-120	S-120
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S120-050305	S-120~11/29/2006	S-120~12/14/2007	S-120_110508	S-120~11/11/2010	S-120_20150518	S-120~11/18/2011	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	5/3/2005	11/29/2006	12/14/2007	11/5/2008	11/11/2010	5/18/2015	11/18/2011	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.005)	ND (0.0005)	ND (0.0005)	0.0005 J (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Cumene	37	9100	63	30	4	2.6	ND (0.005)	ND (0.001)	ND (0.0005)	ND (0.002)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.0000097)	ND (0.0000095)	ND (0.000029)	ND (0.0000098)	ND (0.0000097)	ND (0.0000096)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005)	ND (0.001)	ND (0.0005)	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.005)	ND (0.0008)	ND (0.0005)	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)	ND (0.0005)	NA	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.0007)	ND (0.0005)	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	NA	NA	ND (0.002)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	NA	NA	ND (0.002)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.005)	ND (0.0008)	ND (0.0005)	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA	
Anthracene	240	--	--	19000	--	40	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	NA	NA	NA	NA	NA	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.01)	ND (0.001)	ND (0.0009)	ND (0.005)	ND (0.000057)	ND (0.001)	ND (0.000076)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Fluorene	97	--	--	7800	--	7	ND (0.01)	ND (0.001)	ND (0.0009)	NA	NA	ND (0.001)	ND (0.000095)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.01)	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.001)	ND (0.001)	ND (0.00095)	
Phenanthrene	73	--	--	5800	--	1	ND (0.01)	ND (0.001)	ND (0.0009)	ND (0.005)	ND (0.000038)	ND (0.001)	ND (0.000076)	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Pyrene	50	--	--	5800	--	3	ND (0.01)	ND (0.001)	ND (0.0009)	ND (0.005)	ND (0.000095)	ND (0.001)	ND (0.000095)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-120	S-120	S-120	S-120	S-120	S-120	S-120
Field Sample ID	S120-050305	S-120~11/29/2006	S-120~12/14/2007	S-120_110508	S-120~11/11/2010	S-120_20150518	S-120~11/18/2011
Collection Depth (ft bgs)	5/3/2005	11/29/2006	12/14/2007	11/5/2008	11/11/2010	5/18/2015	11/18/2011
Sample Date							
Comments							
Nonpotable GW Use							
Routine Worker GW Vol to Outdoor Air							
Routine Worker GW VI							
Construction Worker GW Direct Contact							
Off-Site Resident GW VI							
GW Migration to SW							
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	ND (0.001)
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	NA
Vanadium	0.14	--	--	6.9	--	100	NA
Zinc	--	--	--	--	--	--	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-120	S-120	S-120	S-120	S-120	S-120	S-120
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-120~11/13/2009	S-120~4/2/2013	S-120_040213	S-120~JB67626	S-120_06_12_2013	S-120-20160518	S-120-20160812-WG	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	11/13/2009	4/2/2013	4/2/2013	5/21/2014	6/12/2013	5/18/2016	8/12/2016	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	NA	ND (0.001)	0.0078 (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.001)	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.001)	
Cumene	37	9100	63	30	4	2.6	ND (0.002)	NA	ND (0.002)	ND (0.001)	ND (0.002)	ND (0.002)	ND (0.001)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.001)	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00002)	NA	ND (0.00002)	ND (0.00002)	ND (0.000029)	ND (0.000029)	ND (0.00001)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.001)	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.001)	NA	ND (0.001)	0.0011 (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.002)	NA	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.002)	NA	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.001)	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	ND (0.00005)	
Anthracene	240	--	--	19000	--	40	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	ND (0.00005)	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.01)	
Chrysene	16	--	--	140000	--	1.3	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	ND (0.00005)	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.00005)	
Fluorene	97	--	--	7800	--	7	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	ND (0.00005)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.00025)	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.01)	
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.00139 (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00025)	
Phenanthrene	73	--	--	5800	--	1	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.01)	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.003)	
Pyrene	50	--	--	5800	--	3	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-120	S-120	S-120	S-120	S-120	S-120	S-120	S-120	S-120	S-120	S-120
Field Sample ID	S-120~11/13/2009	S-120~4/2/2013	S-120_040213	S-120~JB67626	S-120_06_12_2013	S-120-20160518	S-120-20160812-WG				
Collection Depth (ft bgs)	11/13/2009	4/2/2013	4/2/2013	5/21/2014	6/12/2013	5/18/2016	8/12/2016				
Sample Date											
Comments											
Metals											
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.002)
Lead	--	--	--	--	--	2.5	NA	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.001)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	NA	NA	0.00569 (0.002)
Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	NA	ND (0.005)
Zinc	--	--	--	--	--	--	NA	NA	NA	NA	0.0266 (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-120	S-120	S-121	S-121	S-121	S-121	S-123
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-120-20161011-WG	20-20161011-WG-DUP	S-121	S121-050405	S-121_06_13_2013	S-121-20160815	S-123	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	10/11/2016	10/11/2016	10/20/2004	5/4/2005	6/13/2013	8/15/2016	10/20/2004	
Sample Date		Vol to		Direct Contact	VI			FD						
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	0.15	
sec-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	ND (0.001)	NA	
tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	ND (0.001)	NA	
Cumene	37	9100	63	30	4	2.6	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.002)	ND (0.001)	0.019	
Cyclohexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	ND (0.001)	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.00002)	ND (0.000028)	ND (0.00002)	ND (0.00001)	ND (0.00002)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.0037)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	0.28	
Hexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	ND (0.001)	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.0044)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.005)	0.26	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.001)	ND (0.001)	NA	NA	ND (0.002)	ND (0.001)	NA	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.001)	ND (0.001)	NA	NA	ND (0.002)	ND (0.001)	NA	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.003)	ND (0.003)	ND (0.01)	ND (0.005)	ND (0.001)	ND (0.003)	1.3	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA	
Anthracene	240	--	--	19000	--	40	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA	
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	ND (0.01)	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.00005)	ND (0.00005)	ND (0.00014)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00014)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA	
Fluoranthene	--	--	--	--	--	--	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA	
Fluorene	97	--	--	7800	--	7	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.01)	ND (0.0001)	ND (0.00005)	0.013	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA	
2-Methylnaphthalene	--	--	--	--	--	--	ND (0.00025)	ND (0.00025)	NA	NA	NA	ND (0.00025)	NA	
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	ND (0.01)	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.00025)	ND (0.00025)	ND (0.005)	ND (0.01)	ND (0.0001)	ND (0.00025)	0.22	
Phenanthrene	73	--	--	5800	--	1	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.01)	ND (0.0001)	ND (0.00005)	0.024	
Phenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	ND (0.01)	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	NA	NA	NA	ND (0.003)	NA	
Pyrene	50	--	--	5800	--	3	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.01)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-120	S-120	S-121	S-121	S-121	S-121	S-123
Field Sample ID	S-120-20161011-WG	20-20161011-WG-DUP	S-121	S121-050405	S-121_06_13_2013	S-121-20160815	S-123
Collection Depth (ft bgs)	10/11/2016	10/11/2016	10/20/2004	5/4/2005	6/13/2013	8/15/2016	10/20/2004
Sample Date	FD						
Comments							
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	ND (0.002)
Lead	--	--	--	--	--	2.5	ND (0.002)
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	0.00563 B (0.002)
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)
Zinc	--	--	--	--	--	--	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-123	S-123	S-123	S-216	S-216	S-216	S-216
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S123-050405	S-123-20160818-WG	S-123-20161013-WG	S216-042805	S-216_06_12_2013	S-216-20160816-WG	S-216-20161012-WG	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	5/4/2005	8/18/2016	10/13/2016	4/28/2005	6/12/2013	8/16/2016	10/12/2016	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.008 (0.005)	0.00486 (0.001)	0.00614 (0.001)	0.29 (0.01)	0.0237 (0.001)	0.0182 (0.001)	0.0194 (0.005)	
sec-Butylbenzene	--	--	--	--	--	--	NA	ND (0.001)	ND (0.001)	NA	NA	0.00596 (0.001)	ND (0.005)	
tert-Butylbenzene	--	--	--	--	--	--	NA	ND (0.001)	ND (0.001)	NA	NA	0.0021 (0.001)	ND (0.005)	
Cumene	37	9100	63	30	4	2.6	0.01 (0.005)	ND (0.001)	0.00233 (0.001)	0.073 (0.01)	0.0262 (0.002)	0.0288 (0.001)	0.0223 (0.005)	
Cyclohexane	--	--	--	--	--	--	NA	0.0118 (0.001)	0.04 (0.001)	NA	NA	0.0251 (0.001)	0.0181 (0.005)	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000028)	ND (0.00001)	ND (0.00001)	ND (0.000029)	ND (0.00002)	ND (0.00001)	ND (0.00001)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.01)	ND (0.001)	ND (0.001)	ND (0.005)	
Ethyl Benzene	2	22000	150	40	9.7	13	0.068 (0.005)	0.0107 (0.001)	0.049 (0.001)	0.11 (0.01)	0.00085 J (0.001)	0.00105 (0.001)	ND (0.005)	
Hexane	--	--	--	--	--	--	NA	0.00472 (0.001)	0.00929 (0.001)	NA	NA	ND (0.001)	ND (0.005)	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)	ND (0.001)	ND (0.001)	0.21 (0.01)	0.0006 J (0.001)	0.00417 (0.001)	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	0.19 (0.005)	0.0208 (0.005)	0.0955 (0.005)	0.048 (0.01)	0.0046 (0.001)	0.00611 (0.005)	ND (0.025)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	0.0125 (0.001)	0.032 (0.001)	NA	0.00034 J (0.002)	ND (0.001)	0.0125 (0.005)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	0.00222 (0.001)	0.00318 (0.001)	NA	ND (0.002)	ND (0.001)	ND (0.005)	
Xylenes (total)	3.7	1900	13	17	0.86	210	0.25 (0.005)	0.0434 (0.003)	0.134 (0.003)	0.24 (0.01)	0.0037 (0.001)	0.00522 (0.003)	ND (0.015)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	0.00243 (0.00005)	0.000908 (0.00005)	NA	NA	0.00177 (0.00005)	0.00158 J- (0.00005)	
Anthracene	240	--	--	19000	--	40	NA	0.00131 (0.00005)	0.00034 (0.00005)	NA	0.000246 (0.0001)	ND (0.00005)	ND,J (0.00005)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	ND (0.00005)	ND,J (0.00005)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	ND (0.00005)	ND,J (0.00005)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	ND (0.00005)	ND,J (0.00005)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	ND (0.00005)	ND,J (0.00005)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	ND,J (0.00005)	
1,1-Biphenyl	--	--	--	--	--	--	NA	ND (0.01)	ND (0.01)	NA	NA	ND (0.01)	ND (0.01)	
Chrysene	16	--	--	140000	--	1.3	ND (0.01)	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND,J (0.00005)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	ND,OE (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	ND,J (0.00005)	
Fluoranthene	--	--	--	--	--	--	NA	0.00017 (0.00005)	ND (0.00005)	NA	NA	0.0000961 (0.00005)	0.0000701 J- (0.00005)	
Fluorene	97	--	--	7800	--	7	0.013 (0.01)	0.00251 (0.00005)	0.00122 (0.00005)	0.06 (0.01)	0.00347 (0.0001)	0.00296 (0.00005)	0.00268 J- (0.00005)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	ND,OE (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	ND,J (0.00005)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	0.00304 (0.00025)	0.000802 (0.00025)	NA	NA	ND (0.00025)	0.0114 J- (0.00025)	
3&4-Methylphenol	--	--	--	--	--	--	NA	ND (0.01)	ND (0.01)	NA	NA	ND (0.01)	ND (0.01)	
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.026 (0.01)	0.00241 (0.00025)	0.00423 (0.00025)	0.15 (0.05)	ND (0.0001)	0.00136 (0.00025)	0.00648 J- (0.00025)	
Phenanthrene	73	--	--	5800	--	1	0.034 (0.01)	0.00517 (0.00005)	0.00185 (0.00005)	0.087 (0.01)	0.00271 (0.0001)	0.00361 (0.00005)	0.00353 J- (0.00005)	
Phenol	--	--	--	--	--	--	NA	ND (0.01)	ND (0.01)	NA	NA	ND (0.01)	ND (0.01)	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	ND (0.003)	ND (0.003)	NA	NA	0.03 (0.003)	0.00523 (0.003)	
Pyrene	50	--	--	5800	--	3	ND (0.01)	0.00116 (0.00005)	0.000279 (0.00005)	ND (0.01)	ND (0.0001)	0.00017 (0.00005)	0.000122 J- (0.00005)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-123	S-123	S-123	S-216	S-216	S-216	S-216
							S123-050405 5/4/2005	S-123-20160818-WG 8/18/2016	S-123-20161013-WG 10/13/2016	S216-042805 4/28/2005	S-216_06_12_2013 6/12/2013	S-216-20160816-WG 8/16/2016	S-216-20161012-WG 10/12/2016
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	ND (0.001)	NA	NA	ND (0.001)	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	0.00599 (0.002)	0.00297 (0.002)	NA	NA	0.0116 (0.002)	0.00545 (0.002)
Lead	--	--	--	--	--	2.5	NA	ND (0.002)	ND (0.002)	NA	ND (0.003)	ND (0.002)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	ND (0.002)	ND (0.002)	NA	NA	0.0426 (0.002)	0.00563 (0.002)
Vanadium	0.14	--	--	6.9	--	100	NA	ND (0.005)	ND (0.005)	NA	NA	ND (0.005)	ND (0.005)
Zinc	--	--	--	--	--	--	NA	ND (0.025)	ND (0.025)	NA	NA	ND (0.025)	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-218	S-218	S-218	S-218	S-218	S-218D	S-218D
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S218-042805	S-218_06_14_2013	S-218-20160817-WG	18-20160817-WG-DUP	S-218-20161012-WG	S-218D-20160426	18D-HS-20160830-WG	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW								
Sample Date		Vol to		Direct Contact	VI		4/28/2005	6/14/2013	8/17/2016	8/17/2016	10/12/2016	4/26/2016	8/30/2016	
Comments		Outdoor Air								FD				
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	2.2 (0.05)	0.682 (0.005)	0.638 (0.01)	0.636 (0.005)	0.498 (0.01)	ND (0.001)	ND (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.01)	0.00689 (0.005)	ND (0.01)	ND (0.005)	ND (0.001)	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.005)	ND (0.01)	ND (0.005)	ND (0.001)	
Cumene	37	9100	63	30	4	2.6	ND (0.05)	0.0157 (0.01)	0.0221 (0.01)	0.0216 (0.005)	0.0138 (0.01)	ND (0.005)	ND (0.001)	
Cyclohexane	--	--	--	--	--	--	NA	NA	0.118 (0.01)	0.113 (0.005)	0.074 (0.01)	ND (0.005)	ND (0.001)	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	0.000052 (0.000029)	ND (0.00002)	ND (0.00001)	ND (0.00001)	ND (0.00001)	ND (0.000028)	ND (0.00001)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.05)	ND (0.005)	ND (0.01)	ND (0.005)	ND (0.01)	ND (0.001)	ND (0.001)	
Ethyl Benzene	2	22000	150	40	9.7	13	1.3 (0.05)	0.0415 (0.005)	0.103 (0.01)	0.0958 (0.005)	0.0487 (0.01)	ND (0.001)	ND (0.001)	
Hexane	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.005)	0.0386 (0.01)	ND (0.005)	ND (0.001)	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.05)	0.0183 (0.005)	ND (0.01)	ND (0.005)	ND (0.01)	0.065 (0.001)	0.0925 (0.001)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	0.36 (0.05)	0.0242 (0.005)	0.0623 (0.05)	0.0612 (0.025)	ND (0.05)	0.006 (0.001)	ND (0.005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	0.0891 (0.01)	0.119 (0.01)	0.112 (0.005)	0.0286 (0.01)	ND (0.005)	ND (0.001)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	0.117 (0.01)	0.106 (0.01)	0.0986 (0.005)	0.0546 (0.01)	ND (0.005)	ND (0.001)	
Xylenes (total)	3.7	1900	13	17	0.86	210	2.4 (0.05)	0.267 (0.005)	0.307 (0.03)	0.286 (0.015)	0.132 (0.03)	ND (0.001)	ND (0.003)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	0.000661 (0.00005)	0.00064 (0.00005)	0.000768 (0.00005)	ND (0.0005)	ND (0.00005)	
Anthracene	240	--	--	19000	--	40	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.001)	ND (0.01)	
Chrysene	16	--	--	140000	--	1.3	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
Fluoranthene	--	--	--	--	--	--	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
Fluorene	97	--	--	7800	--	7	ND (0.01)	0.000424 (0.0001)	0.000814 (0.00005)	0.00071 (0.00005)	0.000917 (0.00005)	ND (0.0005)	ND (0.00005)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	0.0524 (0.00025)	0.041 (0.00025)	0.044 (0.00025)	ND (0.0005)	ND (0.00025)	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.001)	ND (0.01)	
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.25 (0.051)	0.0827 (0.001)	0.0854 (0.00025)	0.0495 (0.00025)	0.0206 (0.00025)	ND (0.0005)	ND (0.00025)	
Phenanthrene	73	--	--	5800	--	1	ND (0.01)	0.000386 (0.0001)	0.000723 (0.00005)	0.00063 (0.00005)	0.000817 (0.00005)	ND (0.0005)	ND (0.00005)	
Phenol	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.001)	ND (0.01)	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.005)	ND (0.003)	
Pyrene	50	--	--	5800	--	3	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-218	S-218	S-218	S-218	S-218	S-218D	S-218D
							S218-042805 4/28/2005	S-218_06_14_2013 6/14/2013	S-218-20160817-WG 8/17/2016	18-20160817-WG-DUP 8/17/2016 FD	S-218-20161012-WG 10/12/2016	S-218D-20160426 4/26/2016	18D-HS-20160830-WG 8/30/2016
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	ND (0.001)	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	0.0147 (0.002)	0.0165 (0.002)	0.0252 (0.002)	0.0168 (0.005)	0.0193 (0.002)
Lead	--	--	--	--	--	2.5	NA	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.002)	0.0127 J (0.015)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	0.00329 (0.002)	0.00341 (0.002)	0.00492 (0.002)	0.0073 J (0.01)	0.00844 (0.002)
Vanadium	0.14	--	--	6.9	--	100	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
Zinc	--	--	--	--	--	--	NA	NA	ND (0.025)	ND (0.025)	ND (0.025)	0.106 (0.02)	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-218D	S-218D	S-218D	S-218D	S-218D	S-218D	S-218D
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-218D-20160831-WG	S-218D-20161011-WG	18D-HS-20161011-WG	S-218D_20180628	S-218D-HS_20180628	S-218D_20190626	S-218D_20191029	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW								
Sample Date		Vol to		Direct Contact	VI		8/31/2016	10/11/2016	10/11/2016	6/28/2018	6/28/2018	6/26/2019	10/29/2019	
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	ND (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	NA	NA	
Cumene	37	9100	63	30	4	2.6	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.005)	ND (0.005)	
Cyclohexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.00001)	NA	NA	ND (0.000028)	ND (0.000028)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.005)	ND (0.005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	ND (0.001)	
Hexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	0.0537 (0.001)	0.0553 (0.001)	0.0511 (0.001)	0.0486 (0.001)	0.0506 (0.001)	0.041 (0.001)	0.037 (0.001)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	ND,OE (0.005)	ND,OE (0.005)	ND (0.025)	ND (0.025)	
Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.005)	ND (0.005)	NA	NA	ND (0.001)	ND (0.001)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.005)	ND (0.005)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.005)	ND (0.005)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.003)	ND (0.003)	ND (0.003)	NA	NA	ND (0.005)	ND (0.003)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	
Anthracene	240	--	--	19000	--	40	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0005)	ND (0.0005)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0005)	ND (0.0005)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0005)	ND (0.0005)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0005)	ND (0.0005)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0005)	ND (0.0005)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND (0.01)	ND (0.01)	NA	NA	NA	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0005)	ND (0.0005)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	
Fluoranthene	--	--	--	--	--	--	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	
Fluorene	97	--	--	7800	--	7	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0005)	ND (0.0005)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	
2-Methylnaphthalene	--	--	--	--	--	--	0.000302 (0.00025)	ND (0.00025)	ND (0.00025)	NA	NA	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	ND (0.01)	NA	NA	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.000529 (0.00025)	ND (0.00025)	ND (0.00025)	NA	NA	ND (0.0005)	ND (0.0005)	
Phenanthrene	73	--	--	5800	--	1	0.000192 (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0005)	ND (0.0005)	
Phenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	ND (0.01)	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	ND (0.003)	NA	NA	NA	NA	
Pyrene	50	--	--	5800	--	3	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0005)	ND (0.0005)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-218D	S-218D	S-218D	S-218D	S-218D	S-218D	S-218D
Field Sample ID	S-218D-20160831-WG	S-218D-20161011-WG	18D-HS-20161011-WG	S-218D_20180628	S-218D-HS_20180628	S-218D_20190626	S-218D_20191029
Collection Depth (ft bgs)	8/31/2016	10/11/2016	10/11/2016	6/28/2018	6/28/2018	6/26/2019	10/29/2019
Sample Date							
Comments							
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	0.0161 (0.002)
Lead	--	--	--	--	--	2.5	ND (0.002)
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	0.00445 (0.002)
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)
Zinc	--	--	--	--	--	--	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-218D	S-219	S-219	S-219	S-219	S-225	S-225
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-218D_20210430	S219-042805	S-219_06_12_2013	S-219-20160815	S-219-20161011-WG	S225-042805	S-225_06_12_2013	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	23.75							
Sample Date		Vol to		Direct Contact	VI		4/30/2021	4/28/2005	6/12/2013	8/15/2016	10/11/2016	4/28/2005	6/12/2013	
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	0.023 (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	0.024 (0.005)	0.0044 (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	ND (0.001)	ND (0.001)	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	ND (0.001)	ND (0.001)	NA	NA	
Cumene	37	9100	63	30	4	2.6	ND (0.005)	ND (0.005)	ND (0.002)	ND (0.001)	ND (0.001)	0.087 (0.005)	0.05 (0.002)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	ND (0.001)	ND (0.001)	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.000029)	ND (0.00002)	ND (0.00001)	ND (0.00001)	ND (0.000029)	ND (0.00002)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	0.0009 J (0.001)	
Hexane	--	--	--	--	--	--	NA	NA	NA	ND (0.001)	ND (0.001)	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	0.036 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	
tert Butyl alcohol	--	--	--	--	--	--	ND (0.05)	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.005)	ND (0.005)	0.01 (0.005)	0.0029 (0.001)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.005)	NA	ND (0.002)	ND (0.001)	ND (0.001)	NA	0.00038 J (0.002)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.005)	NA	ND (0.002)	ND (0.001)	ND (0.001)	NA	ND (0.002)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.006)	0.006 (0.005)	ND (0.001)	ND (0.003)	ND (0.003)	0.011 (0.005)	0.0027 (0.001)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	NA	
Anthracene	240	--	--	19000	--	40	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	0.000436 (0.0001)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	0.000153 (0.0001)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	ND (0.01)	ND (0.01)	NA	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.01)	0.000208 (0.0001)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	NA	
Fluorene	97	--	--	7800	--	7	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	0.056 (0.01)	0.00274 (0.0001)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	ND (0.00025)	ND (0.00025)	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	ND (0.01)	ND (0.01)	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00025)	ND (0.00025)	ND (0.01)	ND (0.0001)	
Phenanthrene	73	--	--	5800	--	1	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	0.071 (0.01)	0.00202 (0.0001)	
Phenol	--	--	--	--	--	--	NA	NA	NA	ND (0.01)	ND (0.01)	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	ND (0.003)	ND (0.003)	NA	NA	
Pyrene	50	--	--	5800	--	3	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.01)	0.000407 (0.0001)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-218D	S-219	S-219	S-219	S-219	S-225	S-225
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-218D_20210430	S-218D_20210430	S219-042805	S-219_06_12_2013	S-219-20160815	S-219-20161011-WG	S225-042805	S-225_06_12_2013
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	23.75	4/30/2021	4/28/2005	6/12/2013	8/15/2016	10/11/2016	4/28/2005	6/12/2013
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Metals														
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	ND (0.001)	NA	NA	NA	NA	ND (0.001)	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	0.00331 B (0.002)	0.00217 (0.002)	NA	NA
Lead	--	--	--	--	--	2.5	ND (0.00052)	NA	NA	ND (0.003)	ND (0.002)	ND (0.002)	NA	ND (0.003)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	NA	NA	0.00395 B (0.002)	ND (0.002)	NA	NA
Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	NA	ND (0.005)	ND (0.005)	NA	NA
Zinc	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.025)	ND (0.025)	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-225	S-225	S-229	S-34	S-35	S-35	S-35
Field Sample ID	S-225-20160815	S-225-20161011-WG	S229-042805	S-34_06_14_2013	S-35-20160818-WG	S-35-20161012-WG	S-35-20161012-WG-DUP
Collection Depth (ft bgs)	8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
Sample Date	8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
Comments	8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
Nonpotable GW Use	8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
Routine Worker GW Vol to Outdoor Air	8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
Routine Worker GW VI	8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
Construction Worker GW Direct Contact	8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
Off-Site Resident GW VI	8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
GW Migration to SW	8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
Physical Parameters							
pH [SU]	--	--	--	--	--	--	--
Volatile Organic Compounds							
Benzene	0.3	550	3.8	4	0.25	130	ND (0.01)
sec-Butylbenzene	--	--	--	--	--	--	0.0127 (0.01)
tert-Butylbenzene	--	--	--	--	--	--	0.00242 (0.001)
Cumene	37	9100	63	30	4	2.6	0.0682 (0.01)
Cyclohexane	--	--	--	--	--	--	0.105 (0.01)
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.01)
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.01)
Hexane	--	--	--	--	--	--	ND (0.01)
2-Hexanone	--	--	--	--	--	--	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.01)
tert Butyl alcohol	--	--	--	--	--	--	NA
Toluene	25	100000	700	200	45	52	ND (0.05)
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.01)
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.01)
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.03)
Semivolatile Organic Compounds							
Acenaphthene	57	--	--	3900	--	9	0.00146 (0.00005)
Anthracene	240	--	--	19000	--	40	0.000279 (0.00005)
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	0.0000828 (0.00005)
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)
Chrysene	16	--	--	140000	--	1.3	0.0000713 (0.00005)
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)
Fluoranthene	--	--	--	--	--	--	0.000269 (0.00005)
Fluorene	97	--	--	7800	--	7	0.00249 (0.00005)
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)
2-Methylnaphthalene	--	--	--	--	--	--	ND (0.00025)
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.0025)
Phenanthrene	73	--	--	5800	--	1	0.000591 (0.00005)
Phenol	--	--	--	--	--	--	ND (0.01)
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)
Pyrene	50	--	--	5800	--	3	0.000323 (0.00005)
Perfluoroalkyl and Polyfluoroalkyl Substances							
Perfluorooctanoic Acid	--	--	--	--	--	--	NA

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-225	S-225	S-229	S-34	S-35	S-35	S-35
							S-225-20160815	S-225-20161011-WG	S229-042805	S-34_06_14_2013	S-35-20160818-WG	S-35-20161012-WG	35-20161012-WG-DUP
							8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
													FD
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	ND (0.001)	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	ND (0.002)	ND (0.002)	NA	NA	ND (0.002)	ND (0.002)	ND (0.002)
Lead	--	--	--	--	--	2.5	ND (0.002)	ND (0.002)	NA	0.0034 (0.003)	ND (0.002)	ND (0.002)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	ND (0.002)	ND (0.002)	NA	NA	ND (0.002)	ND (0.002)	ND (0.002)
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)	ND (0.005)	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)
Zinc	--	--	--	--	--	--	ND (0.025)	ND (0.025)	NA	NA	ND (0.025)	ND (0.025)	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

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Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-36	S-364	S-365	S-365	S-366	S-366	S-366	
							S-36_06_14_2013 6/14/2013	S-364_06_12_2013 6/12/2013	S-365-20160818-WG 8/18/2016	S-365-20161012-WG 10/12/2016	S-366_06_12_2013 6/12/2013	S-366-20160816-WG 8/16/2016	S-366-20161011-WG 10/11/2016	
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.288 (0.005)	0.0098 (0.001)	0.00704 SL (0.005)	0.0645 SL (0.05)	0.232 (0.005)	0.00651 (0.001)	0.00762 (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	ND,SL (0.005)	ND,SL (0.05)	NA	0.00992 (0.001)	0.00696 (0.001)	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	ND,SL (0.005)	ND,SL (0.05)	NA	0.00269 (0.001)	0.00209 (0.001)	
Cumene	37	9100	63	30	4	2.6	0.0418 (0.002)	0.0577 (0.002)	0.0109 SL (0.005)	0.0674 SL (0.05)	0.0529 (0.002)	0.0496 (0.001)	0.0459 (0.001)	
Cyclohexane	--	--	--	--	--	--	NA	NA	0.293 SL (0.005)	0.712 SL (0.05)	NA	0.21 (0.01)	0.141 (0.001)	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00002)	ND (0.00002)	ND,SL (0.00001)	ND,SL (0.00001)	ND (0.00002)	ND (0.00001)	ND (0.00001)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND,SL (0.005)	ND,SL (0.05)	ND (0.001)	ND (0.001)	ND (0.001)	
Ethyl Benzene	2	22000	150	40	9.7	13	0.0369 (0.001)	0.0408 (0.001)	ND,SL (0.005)	ND,SL (0.05)	0.13 (0.001)	0.00381 (0.001)	ND (0.001)	
Hexane	--	--	--	--	--	--	NA	NA	ND,SL (0.005)	0.0527 SL (0.05)	NA	0.00108 (0.001)	ND (0.001)	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	0.0219 (0.001)	0.00054 J (0.001)	ND,SL (0.005)	ND,SL (0.05)	0.00046 J (0.001)	ND (0.001)	ND (0.001)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	0.071 (0.001)	0.0027 (0.001)	ND,SL (0.025)	ND,SL (0.25)	0.0037 (0.001)	ND (0.005)	ND (0.005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	0.003 (0.002)	0.0148 (0.002)	ND,SL (0.005)	ND,SL (0.05)	0.148 (0.002)	0.0351 (0.001)	0.0137 (0.001)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	0.0555 (0.002)	0.0135 (0.002)	0.0125 SL (0.005)	ND,SL (0.05)	0.0451 (0.002)	0.0229 (0.001)	0.0134 (0.001)	
Xylenes (total)	3.7	1900	13	17	0.86	210	0.121 (0.001)	0.0167 (0.001)	ND,SL (0.015)	ND,SL (0.15)	0.335 (0.001)	0.0103 (0.003)	0.00317 (0.003)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	0.00211 SL (0.00005)	0.00468 SL (0.000057)	NA	0.00184 (0.00005)	0.000843 (0.00005)	
Anthracene	240	--	--	19000	--	40	ND (0.0001)	0.000278 (0.0001)	0.000963 SL (0.00005)	0.00243 SL (0.000057)	0.000605 (0.0001)	0.000385 (0.00005)	0.000177 (0.00005)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	0.000515 SL (0.00005)	0.000916 SL (0.000057)	0.000327 (0.0001)	0.000111 (0.00005)	ND (0.00005)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.0001)	ND (0.0001)	0.000244 SL (0.00005)	0.000421 SL (0.000057)	ND (0.0001)	0.0000559 (0.00005)	ND (0.00005)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	0.000244 SL (0.00005)	0.000351 SL (0.000057)	ND (0.0001)	0.0000637 (0.00005)	ND (0.00005)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.0001)	ND (0.0001)	0.000129 SL (0.00005)	0.000194 SL (0.000057)	ND (0.0001)	ND (0.00005)	ND (0.00005)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	0.0000639 SL (0.00005)	0.000123 SL (0.000057)	NA	ND (0.00005)	ND (0.00005)	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	ND,SL (0.05)	ND,SL (0.05)	NA	ND (0.01)	ND (0.01)	
Chrysene	16	--	--	140000	--	1.3	ND (0.0001)	ND (0.0001)	0.000497 SL (0.00005)	0.000856 SL (0.000057)	0.000429 (0.0001)	0.0000864 (0.00005)	ND (0.00005)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	0.00611 OE,SL (0.00005)	0.000979 SL (0.000057)	NA	ND (0.00005)	ND (0.00005)	
Fluoranthene	--	--	--	--	--	--	NA	NA	0.00106 SL (0.00005)	0.0021 SL (0.000057)	NA	0.000396 (0.00005)	0.0000766 (0.00005)	
Fluorene	97	--	--	7800	--	7	0.0115 (0.001)	0.00121 (0.0001)	0.00239 SL (0.00005)	0.00607 SL (0.000057)	0.00324 (0.0001)	0.00293 (0.00005)	0.00141 (0.00005)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	0.00626 OE,SL (0.00005)	0.0001 SL (0.000057)	NA	ND (0.00005)	ND (0.00005)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	0.00206 SL (0.00025)	0.0734 SL (0.00573)	NA	0.0218 (0.00025)	0.00765 (0.00025)	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	ND,SL (0.05)	ND,SL (0.05)	NA	ND (0.01)	ND (0.01)	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.0001)	0.0199 (0.001)	0.00443 SL (0.00025)	0.0235 SL (0.00573)	NA	0.00754 (0.00025)	0.00135 (0.00025)	
Phenanthrene	73	--	--	5800	--	1	0.0165 (0.001)	0.00129 (0.0001)	0.00273 SL (0.00005)	0.0125 SL (0.000057)	0.00261 (0.0001)	0.00323 (0.00005)	0.000981 (0.00005)	
Phenol	--	--	--	--	--	--	NA	NA	ND,SL (0.05)	ND,SL (0.05)	NA	ND (0.01)	ND (0.01)	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	ND,SL (0.015)	ND,SL (0.015)	NA	ND (0.003)	ND (0.003)	
Pyrene	50	--	--	5800	--	3	0.000802 (0.0001)	0.00021 (0.0001)	0.00224 SL (0.00005)	0.0031 SL (0.000057)	0.000711 (0.0001)	0.000504 (0.00005)	0.0000679 (0.00005)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA

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Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-36	S-364	S-365	S-365	S-366	S-366	S-366
							S-36_06_14_2013	S-364_06_12_2013	S-365-20160818-WG	S-365-20161012-WG	S-366_06_12_2013	S-366-20160816-WG	S-366-20161011-WG
							6/14/2013	6/12/2013	8/18/2016	10/12/2016	6/12/2013	8/16/2016	10/11/2016
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	ND,SL (0.002)	ND,SL (0.002)	NA	0.0115 (0.002)	0.00414 (0.002)
Lead	--	--	--	--	--	2.5	NA	ND (0.003)	ND,SL (0.002)	ND,SL (0.002)	ND (0.003)	ND (0.002)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	0.0041 B,SL (0.002)	ND,SL (0.002)	NA	ND (0.002)	ND (0.002)
Vanadium	0.14	--	--	6.9	--	100	NA	NA	ND,SL (0.005)	ND,SL (0.005)	NA	ND (0.005)	ND (0.005)
Zinc	--	--	--	--	--	--	NA	NA	ND,SL (0.025)	ND,SL (0.025)	NA	ND (0.025)	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-366	S-367	S-367	S-367	S-373	S-379	S-381
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-366	S-367	S-367	S-367	S-373	S-379	S-381	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	22.0300006866455	06_12_2013	20160815	20161011-WG	20161014-WG	06_12_2013	06_14_2013	
Sample Date		Vol to		Direct Contact	VI		3/28/2022	6/12/2013	8/15/2016	10/11/2016	10/14/2016	6/12/2013	6/14/2013	
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.005)	0.00083 J (0.001)	ND (0.001)	ND (0.001)	3.33 SL (0.2)	0.0199 (0.001)	0.296 (0.01)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.001)	0.00159 (0.001)	ND,SL (0.2)	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	0.00214 (0.001)	0.00221 (0.001)	ND,SL (0.2)	NA	NA	
Cumene	37	9100	63	30	4	2.6	0.0368 (0.01)	0.0458 (0.002)	ND (0.001)	0.00475 (0.001)	ND,SL (0.2)	0.0034 (0.002)	0.0606 (0.02)	
Cyclohexane	--	--	--	--	--	--	NA	NA	ND (0.001)	ND (0.001)	ND,SL (0.2)	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00002)	ND (0.00002)	ND (0.00001)	ND (0.00001)	ND,SL (0.00001)	ND (0.00002)	ND (0.00002)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.01)	ND (0.001)	ND (0.001)	ND (0.001)	ND,SL (0.2)	ND (0.001)	ND (0.01)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.01)	0.0576 (0.001)	ND (0.001)	ND (0.001)	0.752 SL (0.2)	0.0015 (0.001)	0.554 (0.01)	
Hexane	--	--	--	--	--	--	NA	NA	ND (0.001)	ND (0.001)	ND,SL (0.2)	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.01)	0.00038 J (0.001)	ND (0.001)	ND (0.001)	ND,SL (0.2)	ND (0.001)	0.026 (0.01)	
tert Butyl alcohol	--	--	--	--	--	--	15.8 (0.5)	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.01)	0.00028 J (0.001)	ND (0.005)	ND (0.005)	ND,SL (1)	0.00054 J (0.001)	1.77 (0.01)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.02)	0.0539 (0.002)	ND (0.001)	ND (0.001)	1.01 SL (0.2)	0.00053 J (0.002)	1.13 (0.02)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.02)	0.0147 (0.002)	ND (0.001)	ND (0.001)	0.295 SL (0.2)	0.0039 (0.002)	0.374 (0.02)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.01)	0.0453 (0.001)	ND (0.003)	ND (0.003)	3.84 SL (0.6)	0.0013 (0.001)	3.6 (0.01)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	0.000651 (0.00005)	0.000579 (0.00005)	0.894 SL (0.025)	NA	NA	
Anthracene	240	--	--	19000	--	40	0.000403 (0.000074)	ND (0.0001)	0.000176 (0.00005)	0.0000819 (0.00005)	0.355 SL (0.025)	ND (0.0001)	0.000898 (0.0001)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	0.0000405 (0.000037)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND,SL (0.025)	ND (0.0001)	ND (0.0001)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	0.0000253 J (0.000037)	ND (0.0001)	ND (0.00005)	ND (0.00005)	0.000289 SL (0.00005)	ND (0.0001)	ND (0.0001)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	0.0000293 J (0.000037)	ND (0.0001)	ND (0.00005)	ND (0.00005)	0.000323 SL (0.00005)	ND (0.0001)	ND (0.0001)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.000074)	ND (0.0001)	ND (0.00005)	ND (0.00005)	0.000238 SL (0.00005)	ND (0.0001)	ND (0.0001)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	ND (0.00005)	ND (0.00005)	0.0000957 SL (0.00005)	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	ND (0.0111)	ND (0.01)	0.255 SL (0.05)	NA	NA	
Chrysene	16	--	--	140000	--	1.3	0.0000594 J (0.000074)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND,SL (0.025)	ND (0.0001)	ND (0.0001)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	ND (0.00005)	ND (0.00005)	ND,SL (0.00005)	NA	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	0.000101 (0.00005)	ND (0.00005)	ND,SL (0.025)	NA	NA	
Fluorene	97	--	--	7800	--	7	0.000542 (0.000074)	0.000873 (0.0001)	0.00153 (0.00005)	0.00146 (0.00005)	0.748 SL (0.025)	ND (0.0001)	0.00973 (0.002)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.00005)	ND (0.00005)	0.000144 SL (0.00005)	NA	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	ND (0.00025)	ND (0.00025)	8.37 SL (0.125)	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	ND (0.0111)	ND (0.01)	ND,SL (0.01)	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.000074)	0.00134 (0.0001)	ND (0.00025)	ND (0.00025)	2.41 SL (0.125)	ND (0.0001)	0.136 (0.002)	
Phenanthrene	73	--	--	5800	--	1	ND (0.000074)	ND (0.0001)	ND (0.00005)	ND (0.00005)	2.25 SL (0.025)	0.000199 (0.0001)	0.0137 (0.0002)	
Phenol	--	--	--	--	--	--	NA	NA	ND (0.0111)	ND (0.01)	0.0131 SL (0.01)	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	ND (0.00333)	ND (0.003)	0.0395 SL (0.003)	NA	NA	
Pyrene	50	--	--	5800	--	3	0.000154 (0.000074)	ND (0.0001)	0.000135 (0.00005)	ND (0.00005)	0.112 SL (0.025)	ND (0.0001)	0.000677 (0.0001)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-366	S-367	S-367	S-367	S-373	S-379	S-381
Field Sample ID	S-366_20220328	S-367_06_12_2013	S-367-20160815	S-367-20161011-WG	S-373-20161014-WG	S-379_06_12_2013	S-381_06_14_2013
Collection Depth (ft bgs)	22.0300006866455						
Sample Date	3/28/2022	6/12/2013	8/15/2016	10/11/2016	10/14/2016	6/12/2013	6/14/2013
Comments							
Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW		
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	ND (0.001)
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	NA
Vanadium	0.14	--	--	6.9	--	100	NA
Zinc	--	--	--	--	--	--	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

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Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-381	S-381	S-39D	S-39D	S-39D	S-39D	S-39D	
							S-381-20160817-WG 8/17/2016	S-381-20161013-WG 10/13/2016	S-39D-20160426 4/26/2016	39D-HS-20160830-WG 8/30/2016	S-39D-20160831-WG 8/31/2016	S-39D-20161011-WG 10/11/2016	39D-HS-20161011-WG 10/11/2016	
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.0103 (0.001)	0.0194 (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
sec-Butylbenzene	--	--	--	--	--	--	0.00141 (0.001)	0.00243 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Cumene	37	9100	63	30	4	2.6	0.00415 (0.001)	0.00697 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Cyclohexane	--	--	--	--	--	--	0.0302 (0.001)	0.0455 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.000028)	ND (0.00001)	ND (0.00001)	ND (0.00001)	ND (0.00001)	ND (0.00001)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Ethyl Benzene	2	22000	150	40	9.7	13	0.0652 (0.001)	0.101 (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Hexane	--	--	--	--	--	--	0.0564 (0.001)	0.0563 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	ND (0.001)	0.07 (0.001)	0.0329 (0.001)	0.0638 (0.001)	0.0511 (0.001)	0.0175 (0.001)	0.0175 (0.001)
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	0.109 (0.005)	0.172 (0.005)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	0.088 (0.001)	0.15 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	0.0216 (0.001)	0.0408 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Xylenes (total)	3.7	1900	13	17	0.86	210	0.217 (0.003)	0.352 (0.003)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	0.000912 (0.0001)	0.00168 (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Anthracene	240	--	--	19000	--	40	0.000173 (0.0001)	0.000381 (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND,OE (0.01)	ND (0.001)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Chrysene	16	--	--	140000	--	1.3	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Fluoranthene	--	--	--	--	--	--	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Fluorene	97	--	--	7800	--	7	0.00125 (0.0001)	0.00245 (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
2-Methylnaphthalene	--	--	--	--	--	--	0.0136 (0.0005)	0.0283 (0.0005)	ND (0.0005)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND,OE (0.01)	ND (0.001)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.0215 (0.0005)	0.0335 (0.0005)	ND (0.0005)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
Phenanthrene	73	--	--	5800	--	1	0.00164 (0.0001)	0.00352 (0.0001)	ND (0.0005)	ND (0.00005)	0.000196 (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Phenol	--	--	--	--	--	--	ND (0.01)	ND,OE (0.01)	ND (0.001)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	ND (0.005)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)
Pyrene	50	--	--	5800	--	3	0.000129 (0.0001)	0.000382 (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-381	S-381	S-39D	S-39D	S-39D	S-39D	S-39D
Field Sample ID	S-381-20160817-WG	S-381-20161013-WG	S-39D-20160426	39D-HS-20160830-WG	S-39D-20160831-WG	S-39D-20161011-WG	39D-HS-20161011-WG
Collection Depth (ft bgs)	8/17/2016	10/13/2016	4/26/2016	8/30/2016	8/31/2016	10/11/2016	10/11/2016
Sample Date							
Comments							
Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW		
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	ND (0.002)
Lead	--	--	--	--	--	2.5	ND (0.002)
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	ND (0.002)
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)
Zinc	--	--	--	--	--	--	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

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Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-39D	S-39D	S-39D	S-39D	S-39D	S-39D	S-39D
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-39D_20180628	S-39D-HS_20180628	S-39D_20190620	S-39D_20191029	DUP-2_20191029	0210507_410-39177-1	S-39D	S-39D
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	6/28/2018	6/28/2018	6/20/2019	10/29/2019	10/29/2019	23.8999996185303	7/21/2021	7/21/2021
Sample Date		Vol to		Direct Contact	VI						FD			
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	6.96
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	NA	NA	0.0002 J (0.001)	ND (0.001)	ND (0.001)	0.00069 J (0.001)	NA	NA
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Cumene	37	9100	63	30	4	2.6	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	NA	NA
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	NA	NA	ND (0.000028)	ND (0.000028)	ND (0.000028)	ND (0.000029)	NA	NA
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.001)	NA	NA
Ethyl Benzene	2	22000	150	40	9.7	13	NA	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	0.0551 (0.001)	0.0282 (0.001)	0.091 (0.001)	0.031 (0.001)	0.033 (0.001)	0.024 (0.001)	NA	NA
tert Butyl alcohol	--	--	--	--	--	--	ND,OE (0.005)	ND,OE (0.005)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.05)	NA	NA
Toluene	25	100000	700	200	45	52	NA	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	NA	NA
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	NA	NA
Xylenes (total)	3.7	1900	13	17	0.86	210	NA	NA	ND (0.005)	ND (0.003)	ND (0.003)	ND (0.006)	NA	NA
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	240	--	--	19000	--	40	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	16	--	--	140000	--	1.3	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	97	--	--	7800	--	7	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Phenanthrene	73	--	--	5800	--	1	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	50	--	--	5800	--	3	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	NA
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	0.00002 (0.00002)	NA

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-39D	S-39D	S-39D	S-39D	S-39D	S-39D	S-39D
Field Sample ID	S-39D_20180628	S-39D-HS_20180628	S-39D_20190620	S-39D_20191029	DUP-2_20191029	0210507_410-39177-1	S-39D
Collection Depth (ft bgs)	6/28/2018	6/28/2018	6/20/2019	10/29/2019	10/29/2019	23.89999996185303	S-39D
Sample Date	6/28/2018	6/28/2018	6/20/2019	10/29/2019	10/29/2019	5/7/2021	S-39D
Comments					FD		
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	NA
Vanadium	0.14	--	--	6.9	--	100	NA
Zinc	--	--	--	--	--	--	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-39D 39D_20220405_42610 24.8199996948242 4/5/2022	S-40 S-40~1/1/1985 1/1/1985	S-40 S-40~1/1/1986 1/1/1986	S-40 S-40~1/1/1988 1/1/1988	S-40 S-40~1/1/1993 1/1/1993	S-40 S-40~1/1/1994 1/1/1994	S-40 S-40~12/28/1995 12/28/1995
Physical Parameters													
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Benzene	0.3	550	3.8	4	0.25	130	ND (0.0005)	2.8	0.6	2	0.078	0.28	0.15
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	37	9100	63	30	4	2.6	ND (0.001)	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00002)	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	1.2	0.21	2.9	0.012	0.14 J	0.029
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	0.0596 (0.001)	NA	NA	NA	NA	NA	NA
tert Butyl alcohol	--	--	--	--	--	--	ND (0.01)	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	ND (0.001)	ND	ND	ND	0.006	0.055 J	0.023
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.002)	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.002)	NA	NA	NA	NA	NA	NA
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.001)	6.1	1.52	4.1	0.016	0.075 J	0.0512
Semivolatile Organic Compounds													
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA
Anthracene	240	--	--	19000	--	40 0000442 JB (0.000082)	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.000041)	ND	ND	ND (0.01)	ND	ND (0.001)	0.001
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.000041)	ND	ND	ND (0.01)	ND	ND (0.001)	ND (0.001)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.000041)	ND	ND	ND (0.01)	ND	ND (0.001)	0.001
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.000082)	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	16	--	--	140000	--	1.3	ND (0.000082)	ND	ND	ND	ND	ND (0.01)	ND
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	ND	ND	ND (0.01)	ND	ND (0.001)	ND (0.001)
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	97	--	--	7800	--	7	ND (0.000082)	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	ND	ND	ND	ND	ND (0.01)	ND
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.000082)	NA	NA	NA	NA	NA	NA
Phenanthrene	73	--	--	5800	--	1	ND (0.000082)	NA	NA	NA	NA	NA	NA
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	ND	ND	ND (0.01)	0.001 J	0.003	0.004
Pyrene	50	--	--	5800	--	3 J.0000513 J (0.000082)	NA	NA	NA	NA	NA	NA	NA
Perfluoroalkyl and Polyfluoroalkyl Substances													
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-39D	S-40	S-40	S-40	S-40	S-40	S-40
Field Sample ID	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	39D_20220405_42610	S-40~1/1/1985	S-40~1/1/1986	S-40~1/1/1988	S-40~1/1/1993	S-40~1/1/1994	S-40~12/28/1995
Collection Depth (ft bgs)		Vol to		Direct Contact	VI		24.8199996948242	1/1/1985	1/1/1986	1/1/1988	1/1/1993	1/1/1994	12/28/1995
Sample Date		Outdoor Air					4/5/2022						
Comments													
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	ND	0.19	ND (0.2)	0.0411	0.022	0.099
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	ND	0.0229	ND (0.005)	0.0113	0.021	0.025
Barium	--	--	--	--	--	--	NA	0.15	NA	0.086	0.163	0.16	0.25
Chromium (total)	--	--	--	--	--	--	NA	ND	NA	ND (0.02)	0.03	ND (0.02)	0.11
Cobalt	--	--	--	--	--	--	NA	ND	ND	ND (0.02)	ND	ND (0.02)	ND (0.05)
Lead	--	--	--	--	--	2.5	ND (0.001)	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-40	S-40	S-40	S-40	S-40	S-40	S-40
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-40~1/1/1996	S-40~11/19/1997	S-40~11/12/1998	S-40~12/2/1999	S-40~11/16/2000	S-40~11/14/2001	S-40~11/12/2002	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	1/1/1996	11/19/1997	11/12/1998	12/2/1999	11/16/2000	11/14/2001	11/12/2002	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.012	0.35	0.63	1	0.6	1.2	0.24	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Cumene	37	9100	63	30	4	2.6	NA	NA	NA	NA	NA	NA	NA	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	NA	NA	NA	NA	NA	NA	NA	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	NA	NA	NA	NA	NA	NA	NA	
Ethyl Benzene	2	22000	150	40	9.7	13	0.0034	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	0.068	0.007	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	NA	NA	NA	NA	ND (0.1)	1.2	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	0.0018	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	0.076	0.009	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	NA	NA	NA	NA	NA	NA	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	NA	NA	NA	NA	NA	NA	
Xylenes (total)	3.7	1900	13	17	0.86	210	0.0019	0.056 J	ND (0.1)	ND (0.2)	ND (0.2)	ND (0.1)	0.008	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA	
Anthracene	240	--	--	19000	--	40	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.001)	ND (0.001)	0.002	0.002	ND (0.013)	ND (0.002)	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.001)	ND (0.001)	ND (0.002)	ND (0.002)	ND (0.01)	ND (0.002)	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.001)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.014)	ND (0.002)	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.001)	0.001	ND (0.001)	ND (0.001)	0.003	0.004	ND (0.015)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.004)	ND (0.017)	ND (0.002)	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Fluorene	97	--	--	7800	--	7	NA	NA	NA	NA	NA	NA	NA	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.005)	ND (0.005)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.1)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	NA	NA	NA	NA	NA	NA	NA	
Phenanthrene	73	--	--	5800	--	1	NA	NA	NA	NA	NA	NA	NA	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.001)	0.005	0.008	0.007	ND (0.009)	0.0041	NA	
Pyrene	50	--	--	5800	--	3	NA	NA	NA	NA	NA	NA	NA	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-40	S-40	S-40	S-40	S-40	S-40	S-40
							S-40~1/1/1996	S-40~11/19/1997	S-40~11/12/1998	S-40~12/2/1999	S-40~11/16/2000	S-40~11/14/2001	S-40~11/12/2002
							1/1/1996	11/19/1997	11/12/1998	12/2/1999	11/16/2000	11/14/2001	11/12/2002
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	0.1	0.049	0.238	0.099	0.057	0.029	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	0.029	0.02	0.037	ND (0.008)	0.015	0.0222	NA
Barium	--	--	--	--	--	--	0.38	0.26	0.738	0.974	0.187	ND (0.2)	NA
Chromium (total)	--	--	--	--	--	--	0.13	0.068	0.337	0.114	0.036	0.0207	NA
Cobalt	--	--	--	--	--	--	0.028	0.018	0.093	0.045	0.013	ND (0.05)	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-40	S-40	S-40	S-40	S-40	S-40	S-40
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-40-1	S40-050305	S-40_11_8_2005	S-40~12/6/2006	S-40~12/18/2007	S-40_110708	S-40~11/13/2009	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	11/13/2003	5/3/2005	11/8/2005	12/6/2006	12/18/2007	11/7/2008	11/13/2009	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.987	0.37 (0.025)	0.436 (0.01)	0.22	0.003	ND (0.001)	0.005	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Cumene	37	9100	63	30	4	2.6	NA	0.04 (0.005)	NA	0.017	0.001 J	ND (0.002)	0.004	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	NA	ND (0.00003)	ND (0.00002)	ND (0.0000097)	ND (0.0000095)	ND (0.000029)	ND (0.0000099)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	NA	ND (0.005)	ND (0.01)	ND (0.001)	ND (0.0005)	ND (0.001)	ND (0.0005)	
Ethyl Benzene	2	22000	150	40	9.7	13	0.0195	0.021 (0.005)	0.028 (0.01)	0.008	ND (0.0005)	ND (0.001)	0.0007 J	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	0.117 (0.01)	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)	ND (0.005)	ND (0.01)	ND (0.0005)	NA	ND (0.001)	ND (0.0005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	0.0369	0.014 (0.005)	0.017 (0.01)	0.009	ND (0.0005)	ND (0.001)	0.0005 J	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	NA	NA	NA	NA	ND (0.002)	ND (0.0005)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	NA	NA	NA	NA	ND (0.002)	0.0005 J	
Xylenes (total)	3.7	1900	13	17	0.86	210	0.0209	0.01 (0.005)	0.056 (0.01)	0.005 J	ND (0.0005)	ND (0.001)	ND (0.0005)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA	
Anthracene	240	--	--	19000	--	40	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.0001)	NA	NA	NA	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	NA	ND (0.0001)	NA	NA	NA	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	NA	ND (0.0001)	NA	NA	NA	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	ND (0.0001)	NA	NA	NA	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.002)	ND (0.01)	ND (0.0001)	ND (0.001)	ND (0.0009)	ND (0.005)	0.00037	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Fluorene	97	--	--	7800	--	7	NA	ND (0.01)	0.0009 (0.0001)	0.003 J	0.001 J	NA	NA	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.002)	NA	ND (0.0001)	NA	NA	NA	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	NA	ND (0.01)	0.012 (0.01)	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.001)	
Phenanthrene	73	--	--	5800	--	1	NA	0.016 (0.01)	0.0011 (0.0001)	0.005 J	0.002 J	ND (0.005)	0.0016	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Pyrene	50	--	--	5800	--	3	NA	ND (0.01)	0.0001 (0.0001)	ND (0.001)	ND (0.0009)	ND (0.005)	ND (0.0001)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-40	S-40	S-40	S-40	S-40	S-40	S-40
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration		S-40-1	S40-050305	S-40_11_8_2005	S-40~12/6/2006	S-40~12/18/2007	S-40_110708	S-40~11/13/2009
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW		11/13/2003	5/3/2005	11/8/2005	12/6/2006	12/18/2007	11/7/2008	11/13/2009
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Metals														
Arsenic	0.021	--	--	53	--	1.4		NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5		NA	ND (0.001)	ND (0.01)	NA	NA	NA	NA
Manganese	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4		NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5		NA	NA	NA	0.00018 J	0.00012 J	0.00034 J (0.000001)	0.00025 J
Manganese	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52		NA	NA	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100		NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-40	S-40	S-40	S-40	S-40	S-40	S-415
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-40~11/11/2010	S-40~11/28/2011	S-40_040813	S-40_06_17_2013	S-40_20150518	S-40-20160519	AOI3_S-415_121715	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	11/11/2010	11/28/2011	4/8/2013	6/17/2013	5/18/2015	5/19/2016	12/17/2015	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.072	ND (0.0005)	ND (0.001)	0.00058 J (0.001)	0.01 (0.001)	0.018 (0.001)	0.694 (0.005)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Cumene	37	9100	63	30	4	2.6	0.012	0.0006 J	ND (0.002)	0.0013 J (0.002)	0.006 (0.002)	0.016 (0.002)	0.0445 (0.001)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000095)	ND (0.000099)	ND (0.00002)	ND (0.00002)	ND (0.000029)	ND (0.000029)	ND (0.00002)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
Ethyl Benzene	2	22000	150	40	9.7	13	0.002	ND (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	0.001 (0.001)	0.0015 (0.001)	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.0039 (0.001)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	0.003	0.002	ND (0.001)	ND (0.001)	0.002 (0.001)	0.004 (0.001)	0.29 (0.01)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.0005)	ND (0.0005)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	0.00023 J (0.002)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	0.0007 J	ND (0.0005)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	
Xylenes (total)	3.7	1900	13	17	0.86	210	0.001	ND (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	0.001 (0.001)	0.0016 (0.001)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA	
Anthracene	240	--	--	19000	--	40	NA	NA	ND (0.0001)	0.000307 (0.0001)	0.0002 J (0.0005)	0.0005 J (0.0005)	0.000204 (0.0001)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.0001)	0.000236 (0.0001)	ND (0.0005)	0.0002 J (0.0005)	ND (0.0005)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.0001)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.0001)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Chrysene	16	--	--	140000	--	1.3	0.001 J	0.006	ND (0.0001)	0.00031 (0.0001)	ND (0.0005)	0.0002 J (0.0005)	ND (0.0001)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Fluorene	97	--	--	7800	--	7	0.006	0.0067	0.000135 (0.0001)	0.000586 (0.0001)	0.0004 J (0.0005)	0.001 (0.0005)	0.00151 (0.0001)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.001)	ND (0.0096)	ND (0.0001)	ND (0.0001)	0.0006 (0.0005)	ND (0.0005)	ND (0.0001)	
Phenanthrene	73	--	--	5800	--	1	0.012	0.0092	0.000255 (0.0001)	0.00127 (0.0001)	0.0006 (0.0005)	0.002 (0.0005)	0.000186 (0.0001)	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Pyrene	50	--	--	5800	--	3	0.002 J	ND (0.000096)	ND (0.0001)	0.000418 (0.0001)	0.0002 J (0.0005)	0.0004 J (0.0005)	ND (0.0001)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-40	S-40	S-40	S-40	S-40	S-40	S-415
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration		S-40~11/11/2010	S-40~11/28/2011	S-40_040813	S-40_06_17_2013	S-40_20150518	S-40-20160519	AOI3_S-415_121715
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW		11/11/2010	11/28/2011	4/8/2013	6/17/2013	5/18/2015	5/19/2016	12/17/2015
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Metals														
Arsenic	0.021	--	--	53	--	1.4		NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5		NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4		NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5		0.000074 J	ND (0.00008)	ND (0.003)	ND (0.003)	0.00019 J (0.001)	ND (0.001)	ND (0.003)
Manganese	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52		NA	NA	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100		NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-416	S-416	S-59D	S-59D	S-59D	S-59D	S-59D
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-416-20160817-WG	S-416-20161012-WG	S59D-050605	S-59D_04072011	S-59D_04072011 FILTERED	S-59D_06292011	S-59D_06292011 FILTERED	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	8/17/2016	10/12/2016	5/6/2005	4/7/2011	4/7/2011	6/29/2011	6/29/2011	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.00722 (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	
sec-Butylbenzene	--	--	--	--	--	--	0.00101 (0.001)	0.00112 (0.001)	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA	
Cumene	37	9100	63	30	4	2.6	0.00388 (0.001)	0.00499 (0.001)	ND (0.005)	ND (0.002)	NA	ND (0.002)	NA	
Cyclohexane	--	--	--	--	--	--	0.129 (0.001)	0.073 (0.001)	NA	NA	NA	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.000028)	ND (0.000029)	NA	ND (0.000029)	NA	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	
Ethyl Benzene	2	22000	150	40	9.7	13	0.00141 (0.001)	0.00125 (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	
Hexane	--	--	--	--	--	--	0.00494 (0.001)	ND (0.001)	NA	NA	NA	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	ND (0.001)	ND (0.005)	0.002 (0.001)	NA	0.002 (0.001)	NA	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.005)	ND (0.005)	0.0005 J (0.001)	NA	ND (0.001)	NA	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	0.00203 (0.001)	0.00134 (0.001)	NA	ND (0.002)	NA	ND (0.002)	NA	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.001)	ND (0.001)	NA	ND (0.002)	NA	ND (0.002)	NA	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.003)	ND (0.003)	ND (0.005)	0.002 (0.001)	NA	ND (0.001)	NA	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	0.000181 (0.00005)	0.000102 (0.00005)	NA	NA	NA	NA	NA	
Anthracene	240	--	--	19000	--	40	0.000083 (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	
Fluoranthene	--	--	--	--	--	--	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	
Fluorene	97	--	--	7800	--	7	0.000225 (0.00005)	0.00011 (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	
2-Methylnaphthalene	--	--	--	--	--	--	0.000437 (0.00025)	ND (0.00025)	NA	NA	NA	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.00129 (0.00025)	0.000874 (0.00025)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	
Phenanthrene	73	--	--	5800	--	1	0.000156 (0.00005)	0.0000621 B (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	
Phenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	NA	NA	NA	NA	NA	
Pyrene	50	--	--	5800	--	3	0.0000663 (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-416	S-416	S-59D	S-59D	S-59D	S-59D	S-59D						
Field Sample ID	S-416-20160817-WG	S-416-20161012-WG	S59D-050605	S-59D_04072011	ID_04072011 FILTERED	S-59D_06292011	ID_06292011 FILTERED						
Collection Depth (ft bgs)	8/17/2016	10/12/2016	5/6/2005	4/7/2011	4/7/2011	6/29/2011	6/29/2011						
Sample Date													
Comments													
Nonpotable GW Use	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW										
Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI												
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	0.0551 (0.002)	NA	0.0493 (0.002)	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	0.0127 (0.005)	NA	0.0112 (0.005)	NA
Lead	--	--	--	--	--	2.5	NA	NA	ND (0.001)	0.0015 (0.001)	NA	0.00016 J (0.001)	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	3.01 (0.005)	NA	2.46 (0.005)	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	0.0133 (0.002)	NA	0.0132 (0.002)
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	0.00202 (0.002)	ND (0.002)	NA	NA	0.0119 (0.005)	NA	0.0108 (0.005)
Lead	--	--	--	--	--	2.5	ND (0.002)	ND (0.002)	NA	NA	ND (0.001)	NA	ND (0.001)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	2.91 (0.005)	NA	2.44 (0.005)
Nickel	1.3	--	--	86	--	52	0.00293 (0.002)	ND (0.002)	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)	ND (0.005)	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--	ND (0.025)	ND (0.025)	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-59D	S-59D	S-59D	S-59D	S-59D	S-59D	S-96
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-59D_52512	S-59D_081612	S-59D_102512	S-59D_32913	S-59D-20160819-WG	S-59D-20161011-WG	S-96	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	5/25/2012	8/16/2012	10/25/2012	3/29/2013	8/19/2016	10/11/2016	S-96	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	0.00152 (0.001)	NA	
Cumene	37	9100	63	30	4	2.6	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	ND (0.005)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.000029)	ND (0.00002)	ND (0.00002)	ND (0.00001)	ND (0.00001)	NA	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	0.004 (0.001)	0.005 (0.001)	0.0044 (0.001)	0.0027 (0.001)	0.00111 (0.001)	0.00313 (0.001)	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	NA	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	NA	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.01)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	ND (0.00005)	0.000088 (0.00005)	NA	
Anthracene	240	--	--	19000	--	40	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Fluorene	97	--	--	7800	--	7	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.00025)	ND (0.00025)	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.0005)	ND (0.0005)	ND (0.005)	ND (0.0001)	ND (0.00025)	ND (0.00025)	ND (0.005)	
Phenanthrene	73	--	--	5800	--	1	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.003)	ND (0.003)	NA	
Pyrene	50	--	--	5800	--	3	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-59D	S-59D	S-59D	S-59D	S-59D	S-59D	S-96					
Field Sample ID	S-59D_52512	S-59D_081612	S-59D_102512	S-59D_32913	S-59D-20160819-WG	S-59D-20161011-WG	S-96					
Collection Depth (ft bgs)	5/25/2012	8/16/2012	10/25/2012	3/29/2013	8/19/2016	10/11/2016	10/20/2004					
Sample Date												
Comments												
Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW							
Metals												
Arsenic	0.021	--	--	53	1.4	0.0553 (0.002)	0.0515 (0.002)	0.0543 (0.003)	0.0518 (0.003)	NA	NA	NA
Cobalt	--	--	--	--	--	0.0117 (0.005)	0.0112 (0.005)	ND (0.05)	0.0107 J (0.05)	NA	NA	NA
Lead	--	--	--	--	2.5	0.0005 J (0.001)	0.000099 J (0.001)	0.0041 (0.003)	0.0093 (0.003)	NA	NA	NA
Manganese	--	--	--	--	--	2.54 (0.005)	2.2 (0.005)	1.74 (0.015)	1.82 (0.015)	NA	NA	NA
Mercury	--	--	--	--	--	NA	0.000056 J (0.0002)	ND (0.0002)	ND (0.0002)	NA	NA	NA
Arsenic	0.021	--	--	53	1.4	0.0125 (0.002)	0.0166 (0.002)	0.0346 (0.003)	0.0331 (0.003)	NA	NA	NA
Barium	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	0.0108 (0.005)	0.0112 (0.005)	ND (0.05)	0.0098 J (0.05)	ND (0.002)	0.007 (0.002)	NA
Lead	--	--	--	--	2.5	ND (0.001)	ND (0.001)	0.0047 (0.003)	0.0036 (0.003)	ND (0.002)	ND (0.002)	NA
Manganese	--	--	--	--	--	2.43 (0.005)	2.12 (0.005)	1.98 (0.015)	1.95 (0.015)	NA	NA	NA
Nickel	1.3	--	--	86	52	NA	NA	NA	NA	0.00285 B (0.002)	0.00248 B (0.002)	NA
Vanadium	0.14	--	--	6.9	100	NA	NA	NA	NA	ND (0.005)	ND (0.005)	NA
Zinc	--	--	--	--	--	NA	NA	NA	NA	ND (0.025)	ND (0.025)	NA

Notes:

- All concentrations reported in mg/L; detection limits in parentheses.
- Only compounds with at least one detection are shown.
- MS, OE, and SL are unknown qualifiers.
- Boldfaced concentrations exceed the Nonpotable GW Use.
- No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- No concentrations exceed the Routine Worker GW VI.
- Underlined concentrations exceed the Construction Worker GW Direct Contact.
- Italicized concentrations exceed the Off-Site Resident GW VI.
- Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-96	S-96	S-96	S-97	S-97	S-97	S-97
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S96-080105	S-96_06_14_2013	S-96-20160817-WG	S-97	S97-050405	S-97_06_13_2013	S-97-20160817-WG	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	8/1/2005	6/14/2013	8/17/2016	10/20/2004	5/4/2005	6/13/2013	8/17/2016	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.005)	0.00046 J (0.001)	0.0454 (0.005)	0.29	0.6 (0.05)	0.0028 (0.001)	ND (0.005)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.005)	NA	NA	NA	ND (0.005)	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.005)	NA	NA	NA	ND (0.005)	
Cumene	37	9100	63	30	4	2.6	ND (0.005)	0.00046 J (0.002)	0.0259 (0.005)	0.023	ND (0.05)	0.0048 (0.002)	0.00592 (0.005)	
Cyclohexane	--	--	--	--	--	--	NA	NA	0.168 (0.005)	NA	NA	NA	0.0325 (0.005)	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.00002)	ND (0.00001)	ND (0.00002)	ND (0.000028)	ND (0.00002)	ND (0.00001)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005)	ND (0.001)	ND (0.005)	0.004	ND (0.05)	ND (0.001)	ND (0.005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.005)	ND (0.001)	0.0601 (0.005)	0.055	0.063 (0.05)	0.0019 (0.001)	ND (0.005)	
Hexane	--	--	--	--	--	--	NA	NA	0.109 (0.005)	NA	NA	NA	0.0153 (0.005)	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)	0.0012 (0.001)	ND (0.005)	ND (0.0018)	ND (0.05)	ND (0.001)	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.005)	0.0011 (0.001)	0.0511 (0.025)	0.019	ND (0.05)	0.00068 J (0.001)	ND (0.025)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	ND (0.002)	0.00843 (0.005)	NA	NA	0.0093 (0.002)	0.00642 (0.005)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	ND (0.002)	0.0192 (0.005)	NA	NA	0.01 (0.002)	0.0122 (0.005)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.005)	0.00025 J (0.001)	0.082 (0.015)	0.16	0.23 (0.05)	0.0047 (0.001)	ND (0.015)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	0.00181 (0.001)	NA	NA	NA	0.00314 (0.0001)	
Anthracene	240	--	--	19000	--	40	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	0.00117 (0.0001)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	ND (0.0001)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	ND (0.0001)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	ND (0.0001)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	ND (0.0001)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	ND (0.001)	NA	NA	NA	ND (0.0001)	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	ND (0.01)	NA	NA	NA	ND (0.01)	
Chrysene	16	--	--	140000	--	1.3	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.00014)	ND (0.01)	ND (0.0001)	ND (0.0001)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	ND (0.001)	NA	NA	NA	ND (0.0001)	
Fluoranthene	--	--	--	--	--	--	NA	NA	ND (0.001)	NA	NA	NA	0.000199 (0.0001)	
Fluorene	97	--	--	7800	--	7	ND (0.005)	0.00416 (0.001)	0.00247 (0.001)	ND (0.01)	0.025 (0.01)	0.00139 (0.0001)	0.00319 (0.0001)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.001)	NA	NA	NA	ND (0.0001)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	0.0162 (0.005)	NA	NA	NA	0.0081 (0.0005)	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	ND (0.01)	NA	NA	NA	0.0158 (0.01)	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.005)	ND (0.001)	0.00577 (0.005)	0.055	<i>0.11 (0.01)</i>	ND (0.0001)	0.0009 (0.0005)	
Phenanthrene	73	--	--	5800	--	1	ND (0.005)	ND (0.001)	0.00321 (0.001)	ND (0.01)	0.047 (0.01)	0.00221 (0.0001)	0.00535 (0.0001)	
Phenol	--	--	--	--	--	--	NA	NA	ND (0.01)	NA	NA	NA	ND (0.01)	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	ND (0.003)	NA	NA	NA	ND (0.003)	
Pyrene	50	--	--	5800	--	3	ND (0.005)	0.00311 (0.001)	ND (0.001)	ND (0.01)	ND (0.01)	0.000434 (0.0001)	0.00151 (0.0001)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	S-96	S-96	S-96	S-97	S-97	S-97	S-97
Field Sample ID	S96-080105	S-96_06_14_2013	S-96-20160817-WG	S-97	S97-050405	S-97_06_13_2013	S-97-20160817-WG
Collection Depth (ft bgs)	8/1/2005	6/14/2013	8/17/2016	10/20/2004	5/4/2005	6/13/2013	8/17/2016
Sample Date							
Comments							
Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW		
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	ND (0.001)
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	NA
Vanadium	0.14	--	--	6.9	--	100	NA
Zinc	--	--	--	--	--	--	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location								S-97
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-97-20161013-WG	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW		
Sample Date		Vol to		Direct Contact	VI			10/13/2016
Comments		Outdoor Air						
Physical Parameters								
pH [SU]	--	--	--	--	--	--	--	NA
Volatile Organic Compounds								
Benzene	0.3	550	3.8	4	0.25	130	ND (0.005)	
sec-Butylbenzene	--	--	--	--	--	--	ND (0.005)	
tert-Butylbenzene	--	--	--	--	--	--	ND (0.005)	
Cumene	37	9100	63	30	4	2.6	ND (0.005)	
Cyclohexane	--	--	--	--	--	--	0.0242 (0.005)	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.005)	
Hexane	--	--	--	--	--	--	0.00735 (0.005)	
2-Hexanone	--	--	--	--	--	--	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	
Toluene	25	100000	700	200	45	52	ND (0.025)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.005)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	0.0058 (0.005)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.015)	
Semivolatile Organic Compounds								
Acenaphthene	57	--	--	3900	--	9	0.00228 (0.0001)	
Anthracene	240	--	--	19000	--	40	ND (0.0001)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.0001)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.0001)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.0001)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.0001)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.0001)	
1,1-Biphenyl	--	--	--	--	--	--	ND,OE (0.01)	
Chrysene	16	--	--	140000	--	1.3	ND (0.0001)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.0001)	
Fluoranthene	--	--	--	--	--	--	ND (0.0001)	
Fluorene	97	--	--	7800	--	7	0.00268 (0.0001)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.0001)	
2-Methylnaphthalene	--	--	--	--	--	--	ND (0.0005)	
3&4-Methylphenol	--	--	--	--	--	--	ND,OE (0.01)	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.0005)	
Phenanthrene	73	--	--	5800	--	1	0.00364 (0.0001)	
Phenol	--	--	--	--	--	--	ND,OE (0.01)	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	
Pyrene	50	--	--	5800	--	3	0.000577 (0.0001)	
Perfluoroalkyl and Polyfluoroalkyl Substances								
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	

Appendix C

Table 4

Summary of Historical Groundwater Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) Philadelphia Refining Complex, Philadelphia, Pennsylvania

Location	Field Sample ID	Collection Depth (ft bgs)	Sample Date	Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-97 S-97-20161013-WG 10/13/2016
Metals											
	Arsenic				0.021	--	--	53	--	1.4	NA
	Cobalt				--	--	--	--	--	--	NA
	Lead				--	--	--	--	--	2.5	NA
	Manganese				--	--	--	--	--	--	NA
	Mercury				--	--	--	--	--	--	NA
	Arsenic				0.021	--	--	53	--	1.4	NA
	Barium				--	--	--	--	--	--	NA
	Chromium (total)				--	--	--	--	--	--	NA
	Cobalt				--	--	--	--	--	--	ND (0.002)
	Lead				--	--	--	--	--	2.5	ND (0.002)
	Manganese				--	--	--	--	--	--	NA
	Nickel				1.3	--	--	86	--	52	ND (0.002)
	Vanadium				0.14	--	--	6.9	--	100	ND (0.005)
	Zinc				--	--	--	--	--	--	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

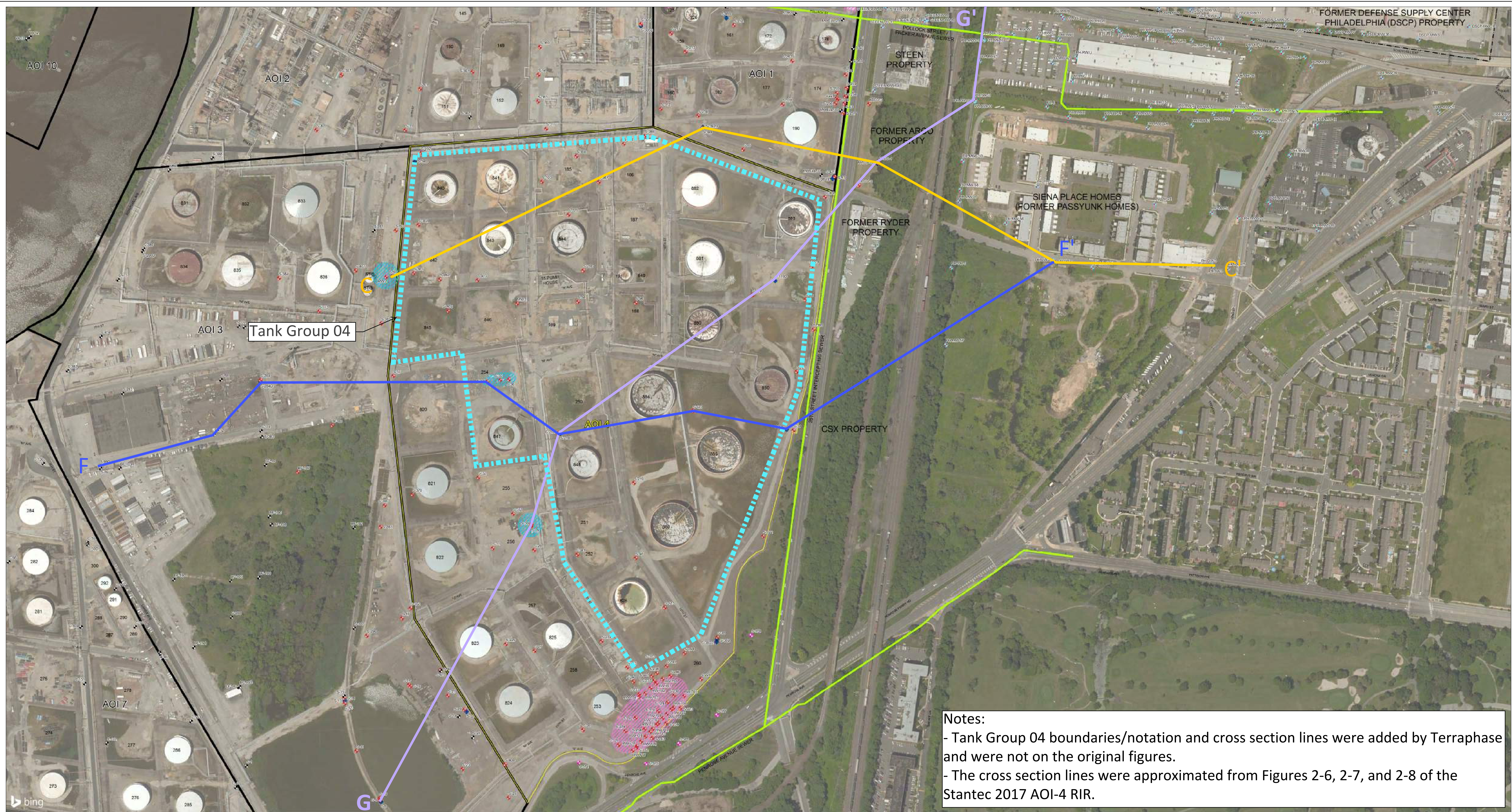
Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix D

Select Figures from the AOI 4 RIR



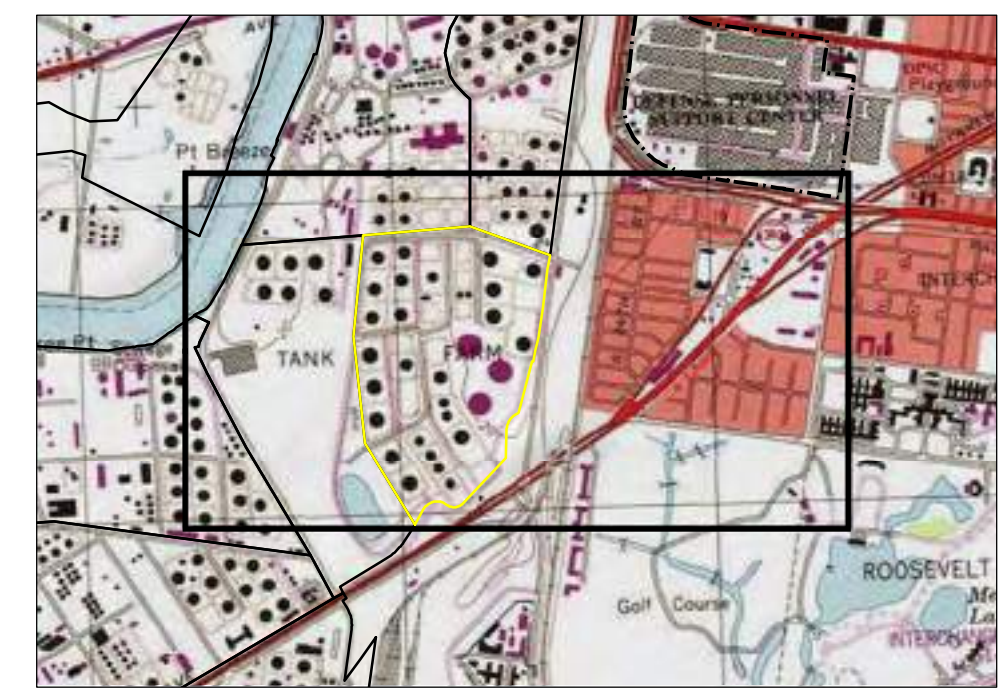
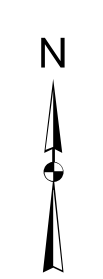
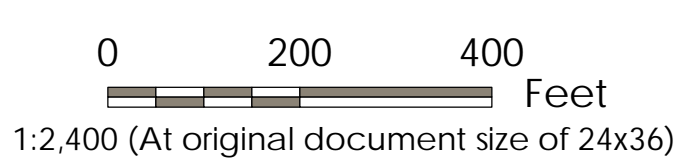


Notes:
 - Tank Group 04 boundaries/notation and cross section lines were added by Terraphase and were not on the original figures.
 - The cross section lines were approximated from Figures 2-6, 2-7, and 2-8 of the Stantec 2017 AOI-4 RIR.



Legend

- OFFSITE MONITORING WELL - FORMER DSCP, PASSYUNK HOMES, STEEN, AND CSX PROPERTIES
- FACILITY MONITORING WELL (AREAS OUTSIDE OF AOI 4)
- PROPOSED MONITORING WELL
- AOI 4 MONITORING WELL (INCLUDING A PORTION OF OFFSITE WELLS MONITORED BY STANTEC)
- HYDROSTRATIGRAPHIC UNIT
- UNCONFINED AQUIFER
- LOWER AQUIFER
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- ▨ REMEDIATION SYSTEMS DESIGNATED AS CURRENTLY ACTIVE
- ▨ REMEDIATION SYSTEMS DESIGNATED AS INACTIVE
- ▭ AREA OF INTEREST (AOI)
- ▭ AOI 4
- ▭ FORMER DEFENSE SUPPLY CENTER PHILADELPHIA (DSCP) PROPERTY



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

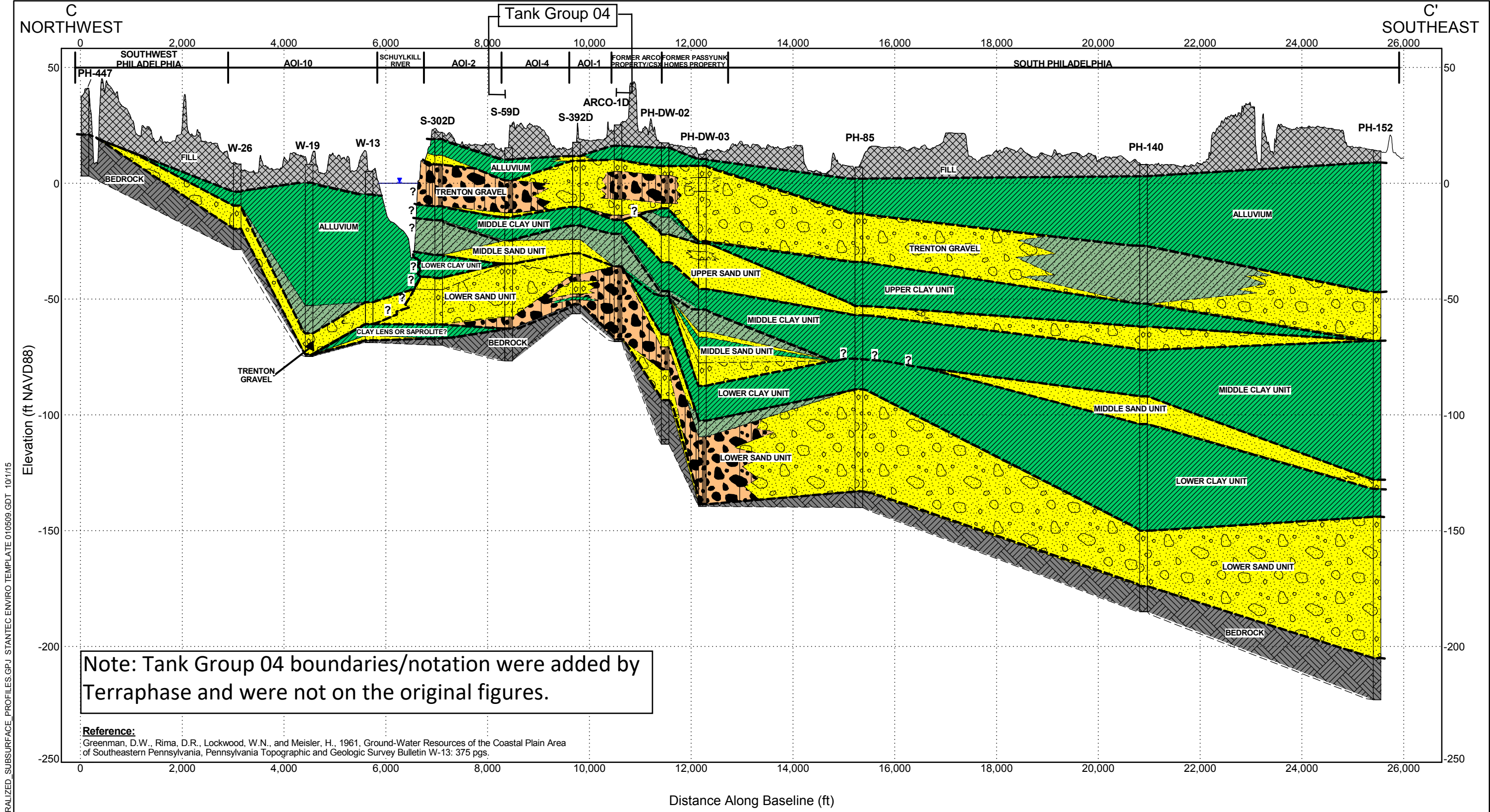
Figure No.
 1-2

Title
 AOI 4 SITE PLAN

213402602
 Prepared by GWC on 1/27/2017
 Technical Review by ADK on 1/31/2017
 Independent Review by JLM on 1/31/2017

Notes
 1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
 2. Data Sources: Stantec and Defense Logistics Agency (DLA)
 3. Aerial & Topo Image courtesy of USGS Earthstar Geographics. SIO © 2017 Microsoft Corporation. Copyright © 2013 National Geographic Society. I-cubed Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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STRAT COLUMN SMALL_AOI1_GENERALIZED_SURFACE_PROFILES.GPJ_STANTEC_ENVIRO TEMPLATE 010509.GDT 10/1/15



GENERALIZED LITHOLOGY GRAPHICS

Apparent Fill	Sand (incl. trace to silt/clay/gravel)	"Mud" (silt/clay, incl. trace to little sand/gravel)
Sandy Gravel	"Muddy" Sand	Bedrock (incl. saprolite where indicated)
Gravelly Sand		

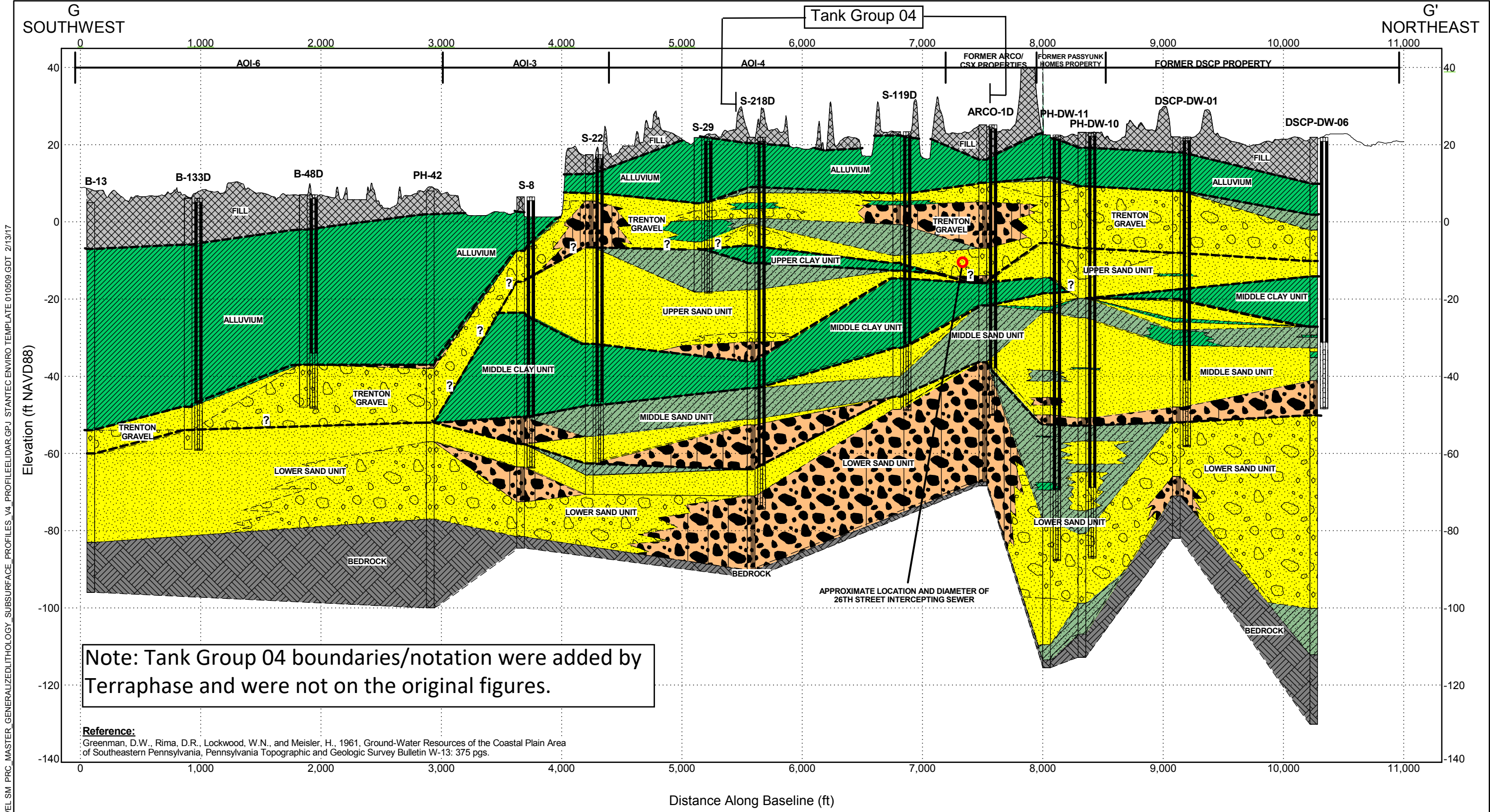
Notes:

1. Land surface profile obtained from a 2010 light detection and ranging (LIDAR) elevation model available from the United States Geological Survey (USGS).
2. Lithologic logs for borings PH-85, PH-140, PH-152, and PH-447 were obtained from Tables 13 and 14 of Greenman et al., 1961. Geographic locations for those borings were digitized on-screen by Stantec using a georeferenced image of Greenman et al., 1961, Plate 1.
3. Water depths for the Schuylkill River were estimated using soundings provided on the National Oceanic and Atmospheric Administration (NOAA) navigation chart for the Delaware River, Philadelphia and Camden Waterfronts (Chart 12313). Mean lower low water (MLLW) depths were transformed to the North American Vertical Datum of 1988 (NAVD 88).
4. Stantec generalized lithologic data from available borehole logs into 8 categories as indicated for interpretive purposes. "Mud" is utilized in these profiles to generally represent clay/silt mixtures, or clay and silt-rich sandy sediments.
5. Correlation between lithologies and, where applicable, geologic units is based on the straight-line method. Actual conditions between boreholes may vary from what is shown on this profile. Contacts dashed where inferred.
6. Vertical Exaggeration - 45 X

Figure 2-6. Stratigraphic Profile C - C'

Philadelphia Refinery Operations
a series of Evergreen Resources Group, LLC
3144 Passyunk Avenue
Philadelphia, PA 19145

Project Number: 213402602



STRAT COLUMN WELL AND WAT LEVEL SM_PRC_MASTER_GENERALIZEDLITHOLOGY_SUBSURFACE_PROFILES_V4_PROFILELIDAR.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 2/13/17



GENERALIZED LITHOLOGY GRAPHICS

Apparent Fill	Sand (incl. trace to silt/clay/gravel)	"Mud" (silt/clay, incl. trace to little sand/gravel)
Sandy Gravel	"Muddy" Sand	Bedrock (incl. saprolite where indicated)
Gravelly Sand		

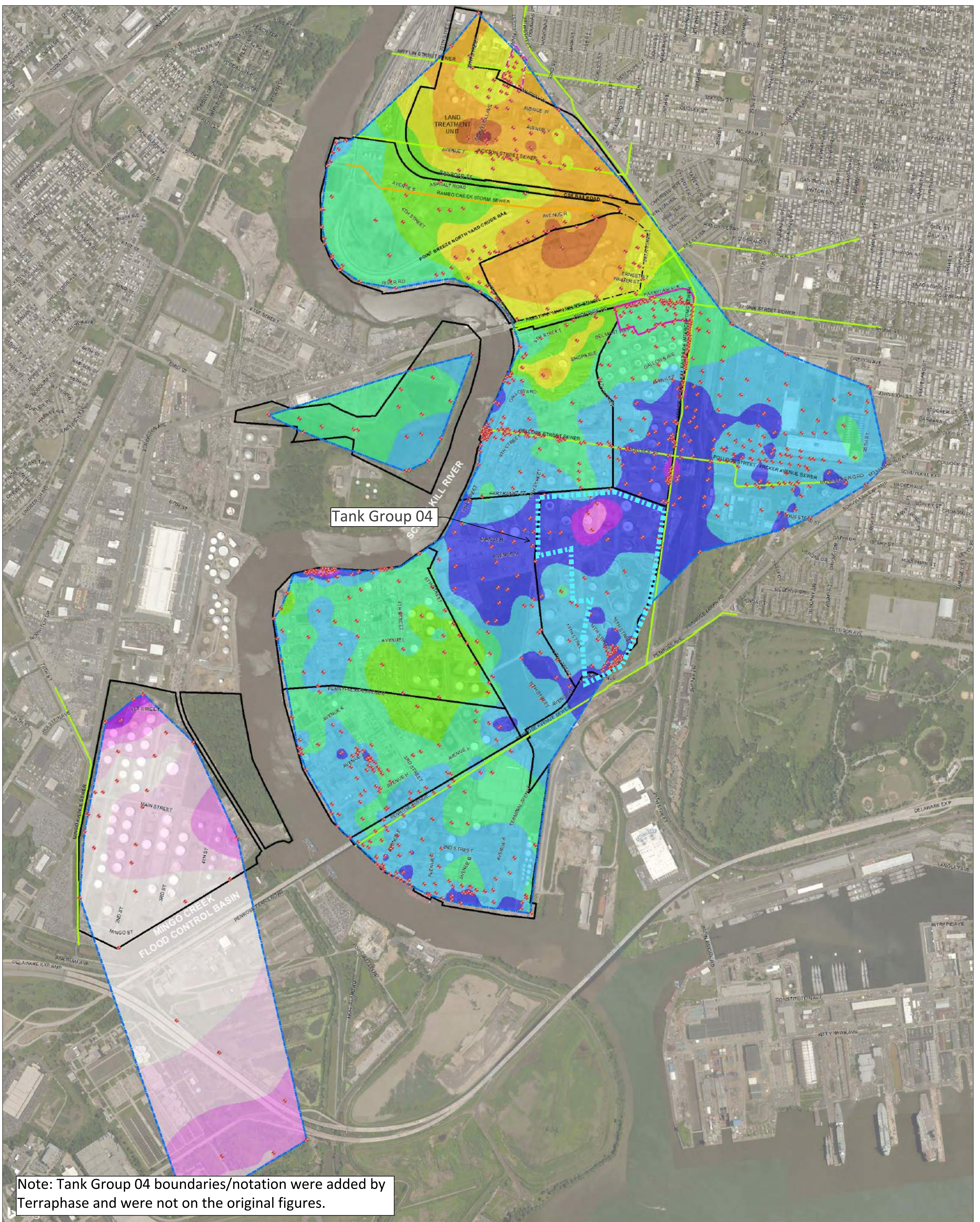
Notes:

1. Land surface profile obtained from a 2010 light detection and ranging (LIDAR) elevation model available from the United States Geological Survey (USGS).
2. Lithologic logs for borings B-13 and PH-42 were obtained from Tables 13 and 14 of Greenman et al., 1961. Geographic locations for those borings were digitized on-screen by Stantec using a georeferenced image of Greenman et al., 1961, Plate 1.
3. Stantec generalized lithologic data from available borehole logs into 8 categories as indicated for interpretive purposes. "Mud" is utilized in these profiles to generally represent clay/silt mixtures, or clay and silt-rich sandy sediments.
4. Correlation between lithologies and, where applicable, geologic units is based on the straight-line method. Actual conditions between boreholes may vary from what is shown on this profile. Contacts are dashed (inferred).
5. Vertical Exaggeration ~ 32 X

Figure 2-8. Stratigraphic Profile G - G'

Philadelphia Refinery Operations
a series of Evergreen Resources Group, LLC
3144 Passyunk Avenue
Philadelphia, PA 19145

Project Number: 213402602



Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



- LEGEND**
- ♦ WELL UTILIZED FOR THE JUNE 2018 WATER-TABLE ELEVATION SURFACE
 - APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
 - APPROXIMATE LOCATION OF RAMBO CREEK STORM SEWER
 - PHILADELPHIA GAS WORKS (PGW) PASSYUNK FACILITY
 - VERIZON SOUTH DISTRICT WORK CENTER (SDWC) PROPERTY
 - AREA OF INTEREST (AOI) BOUNDARY
 - BELMONT TERMINAL
 - APPROXIMATE LIMITS OF WATER-TABLE WELL CONTROL

JUNE 2018 WATER-TABLE ELEVATION
FT NAVD88

14 - 16
12 - 14
10 - 12
8 - 10
6 - 8
4 - 6
2 - 4
0 - 2
-2 - 0
-4 - -2
-6 - -4
-8 - -6
-10 - -8

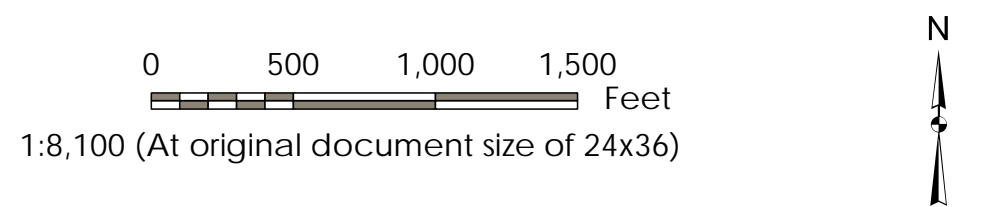


Figure No. 3-29
Title JUNE 2018 WATER-TABLE ELEVATION

Client/Project PHILADELPHIA REFINERY OPERATIONS, A SERIES OF EVERGREEN RESOURCES GROUP, LLC FORMER PHILADELPHIA REFINERY 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Project Location Philadelphia, Philadelphia County, Pennsylvania
Prepared by ADK on 8/14/2018
Technical Review by ANP on 9/20/2018
Independent Review by JLM on 10/19/2018





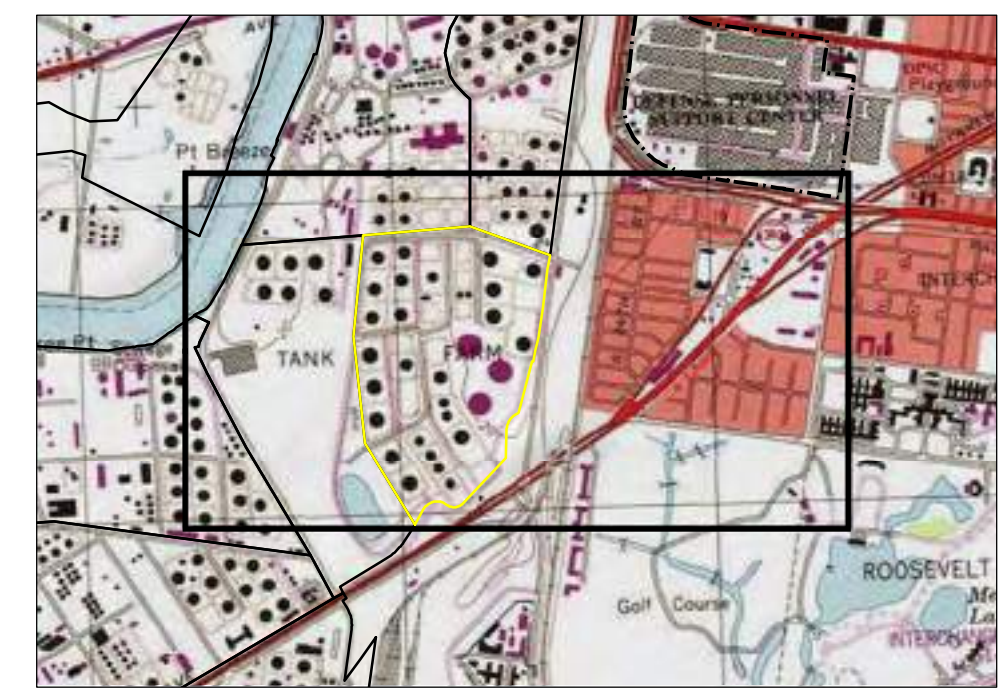
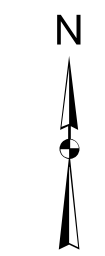
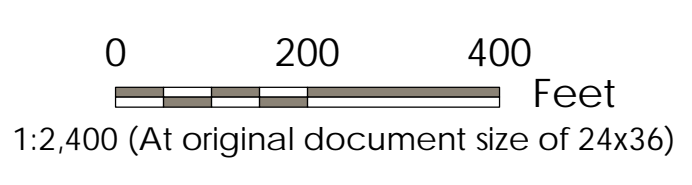
Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



- Legend**
- ◆ 2016 Well Gauging Data - Unconfined Aquifer
 - 2016 WATER-TABLE ELEVATION (ft NAVD 88)
 - APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
 - LIMITS OF UNCONFINED AQUIFER WELL CONTROL
 - AREA OF INTEREST (AOI)
 - AOI 4
 - FORMER DSCP PROPERTY
 - NOT MEASURED
 - WELLS NOT USED FOR GROUNDWATER CONTOURING
 - 1.46' GROUNDWATER ELEVATION (FEET NAVD 88)

Notes

- Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
- Sources: Stantec and Defense Logistics Agency (DLA)
- Labels denote groundwater elevation in feet. Depth to groundwater was measured in each well to the nearest one-hundredth of a foot using an interface probe.
- Contour Interval = 0.5 feet
- Gauging data for DSCP property wells obtained from the DLA. Rigorous evaluation of that data not performed by Stantec.
- Groundwater elevation data was interpolated using block kriging with a linear variogram model in Surfer.
- Aerial & Topo: Service Layer Credits: Image courtesy of USGS Earthstar Geographics. SIO © 2017 Microsoft Corporation. Copyright © 2013 National Geographic Society, I-cubed. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation.



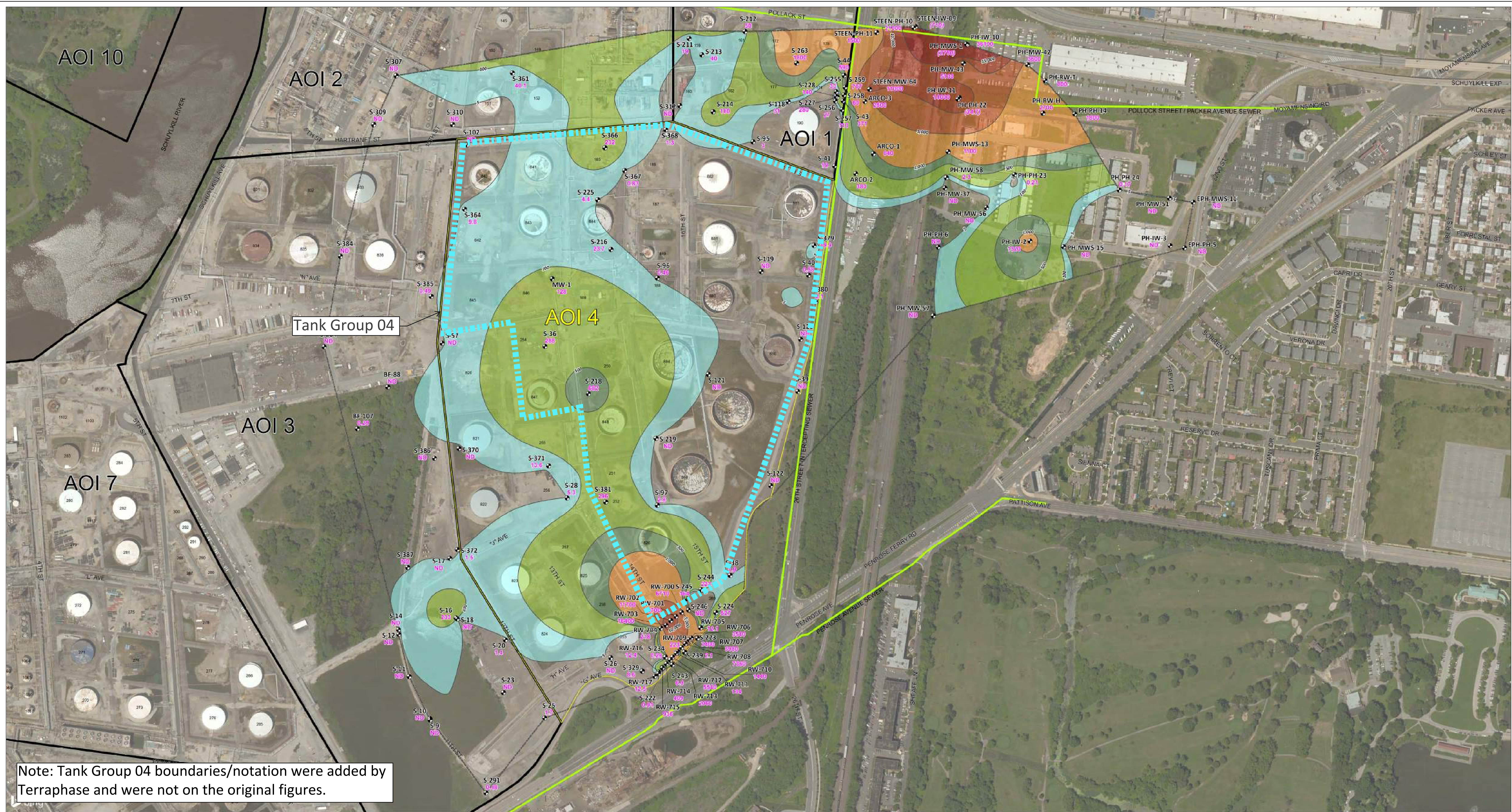
Project Location
 City of Philadelphia, Philadelphia County, Pennsylvania

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF EVERGREEN RESOURCES GROUP, LLC PHILADELPHIA REFINING COMPLEX 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
 5-4

Title
 MAY 2016 WATER-TABLE ELEVATION - INCLUDING SYNOPSIS DSCP GAUGING DATA

213402602
 Prepared by GWC on 1/12/2017
 Technical Review by ADK on 2/23/2017
 Independent Review by JKD on 3/6/2017



Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.

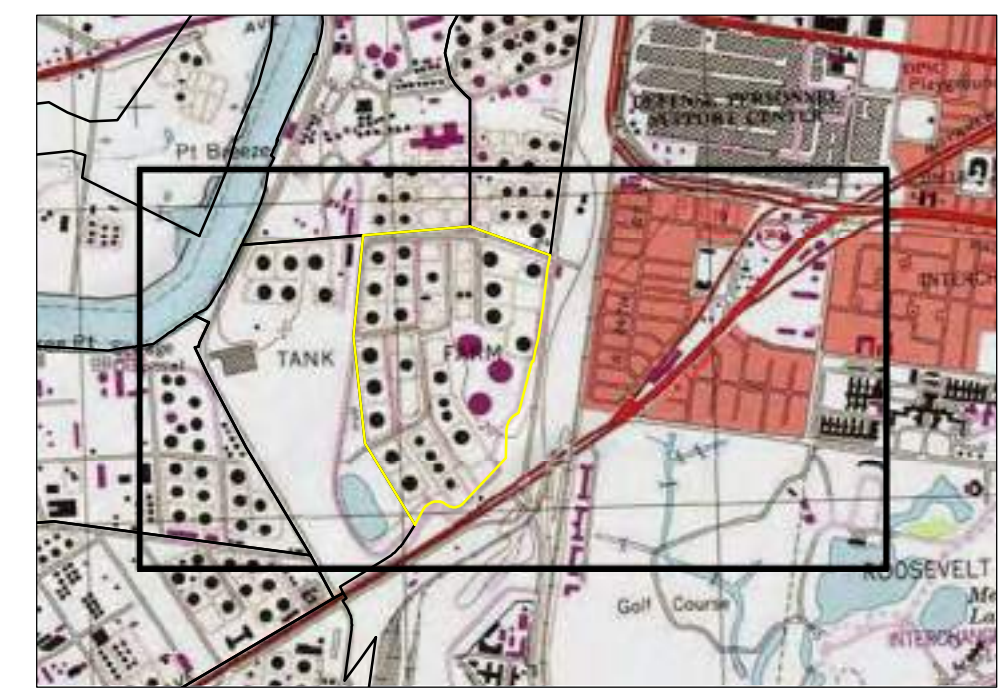
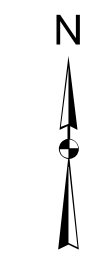
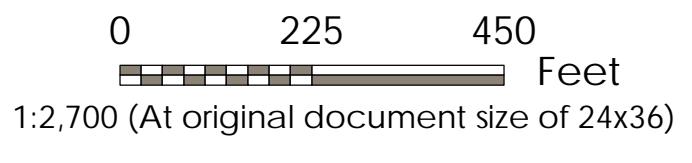


Legend

- MONITORING/RECOVERY WELL
- 2012/2013 BENZENE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- AREA OF INTEREST (AOI)
- AOI 4
- CROPPED GRID EXTENT
- MAXIMUM CONCENTRATION OF BENZENE (ug/L)
- NOT DETECTED
- WELLS NOT USED FOR CONTOURING

BENZENE (MICROGRAMS PER LITER (ug/L))

- 5 (STATEWIDE HEALTH STANDARD) - 100
- 100 - 500
- 500 - 1,000
- 1,000 - 5,000
- 5,000 - 10,000
- 10,000 - 15,000
- > 15,000



Notes

- Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
- Sources: Stantec
- Labels denote well identifier and benzene concentration in micrograms per liter (ug/L)
- COC analytical data was interpolated using the Natural Neighbor gridding method in Surfer.
- Aerial & Topo Image courtesy of USGS Earthstar Geographics. © 2017 Microsoft Corporation. Copyright: © 2013 National Geographic Society. i-cubed Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

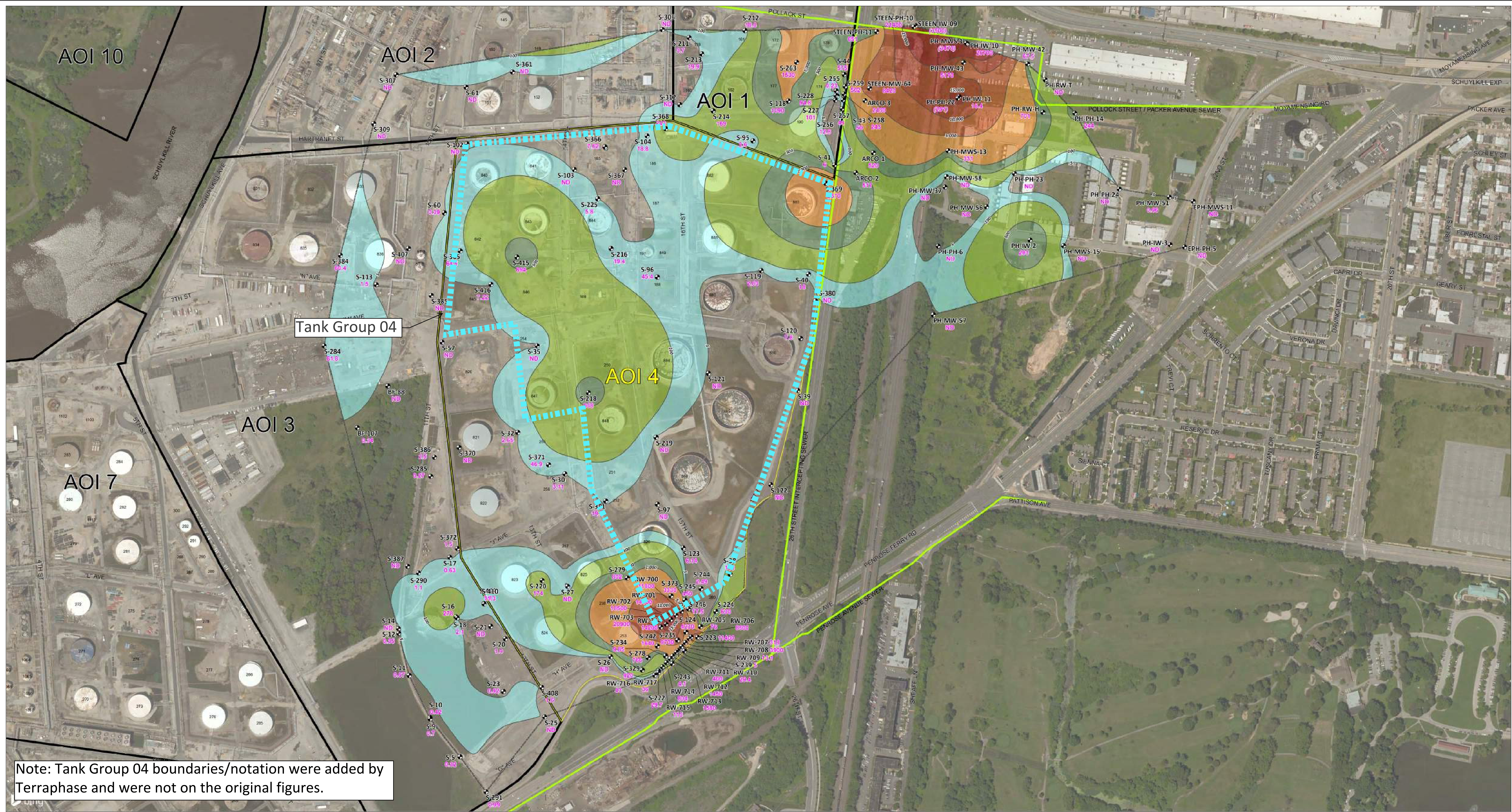
213402602
 Prepared by GWC on 1/7/2017
 Technical Review by ADK on 3/9/2017
 Independent Review by JKD on 3/9/2017

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
 10-2

Title
 UNCONFINED AQUIFER BENZENE MAXIMUM
 CONCENTRATION - 2012 TO 2013 DATA

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Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.

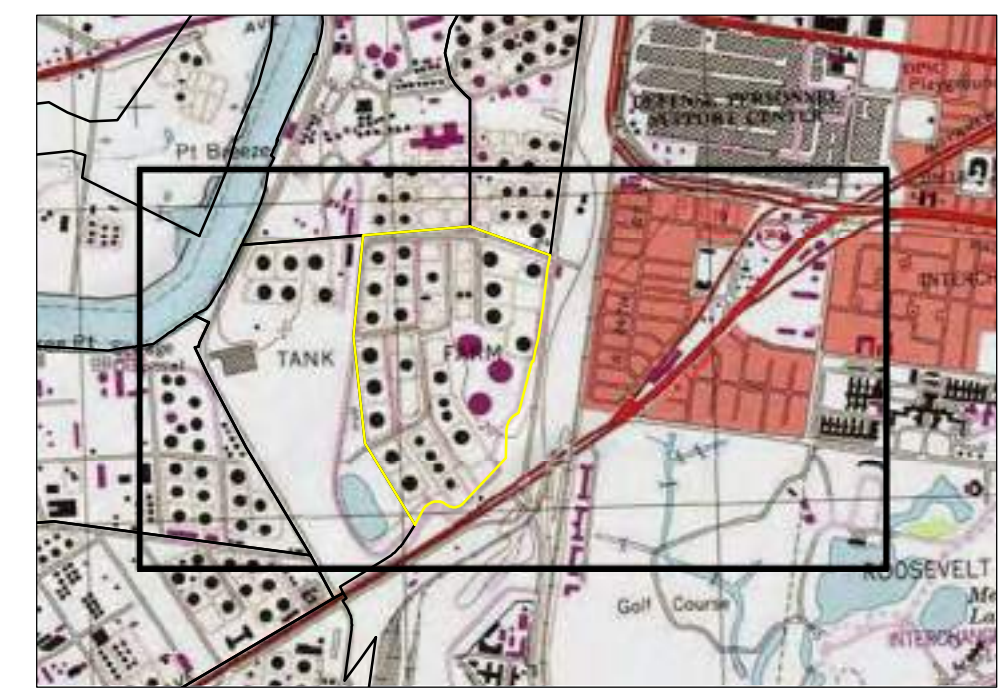
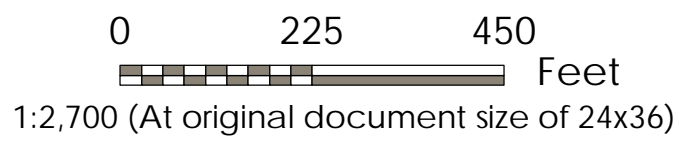


Legend

- MONITORING/RECOVERY WELL
- 2014/2016 BENZENE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- CROPPED GRID EXTENT
- AREA OF INTEREST (AOI)
- AOI 4
- 0.42 MAXIMUM CONCENTRATION OF BENZENE (ug/L)
- ND NOT DETECTED
- STEEN-MW-09 (2100) WELLS NOT USED FOR CONTOURING

BENZENE (MICROGRAMS PER LITER (ug/L))

5 (STATEWIDE HEALTH STANDARD) - 100
100 - 500
500 - 1,000
1,000 - 5,000
5,000 - 10,000
10,000 - 15,000
> 15,000



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
 10-3

Title
 UNCONFINED AQUIFER BENZENE MAXIMUM
 CONCENTRATION - 2014 TO 2016 DATA

213402602
 Prepared by GWC on 1/7/2017
 Technical Review by ADK on 3/9/2017
 Independent Review by JKD on 3/9/2017

Notes

- Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
- Sources: Stantec
- Labels denote well identifier and benzene concentration in micrograms per liter (ug/L)
- COC analytical data was interpolated using the Natural Neighbor gridding method in Surfer.
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Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.

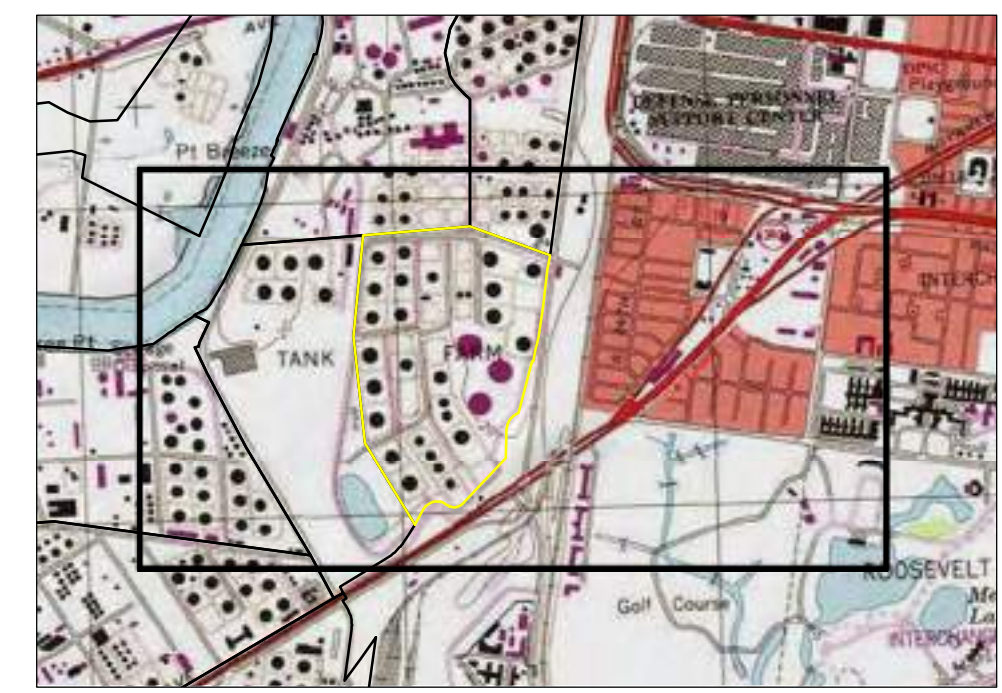
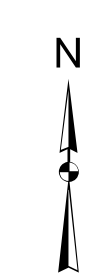
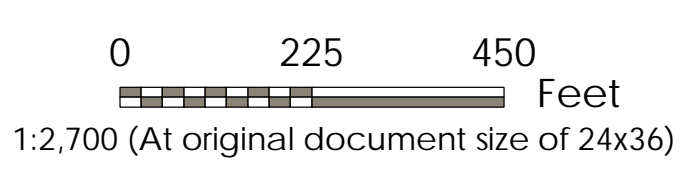


Legend

- MONITORING/RECOVERY WELL
- 2004/2005 MTBE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- AREA OF INTEREST (AOI)
- AOI 4
- CROPPED GRID EXTENT
- MAXIMUM CONCENTRATION OF MTBE [ug/L]
- NOT DETECTED
- WELLS NOT USED FOR CONTOURING

METHYL-TERTIARY BUTYL ETHER (MICROGRAMS PER LITER (ug/L))

- 20 (STATEWIDE HEALTH STANDARD) - 200
- 200 - 2,000



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
 10-4

Title
 UNCONFINED AQUIFER MTBE MAXIMUM
 CONCENTRATION - 2004 TO 2005 DATA

Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
2. Sources: Stantec
3. Labels denote well identifier and MTBE concentration in micrograms per liter (ug/L).
4. CIG - analytical data was interpolated using the Natural Neighbor gridding method in Surfer.
5. MTBE = methyl tertiary butyl ether
6. Aerial & Topo Image courtesy of USGS Earthstar Geographics. SIO © 2017 Microsoft Corporation. Copyright: © 2013 National Geographic Society, I-cubed. Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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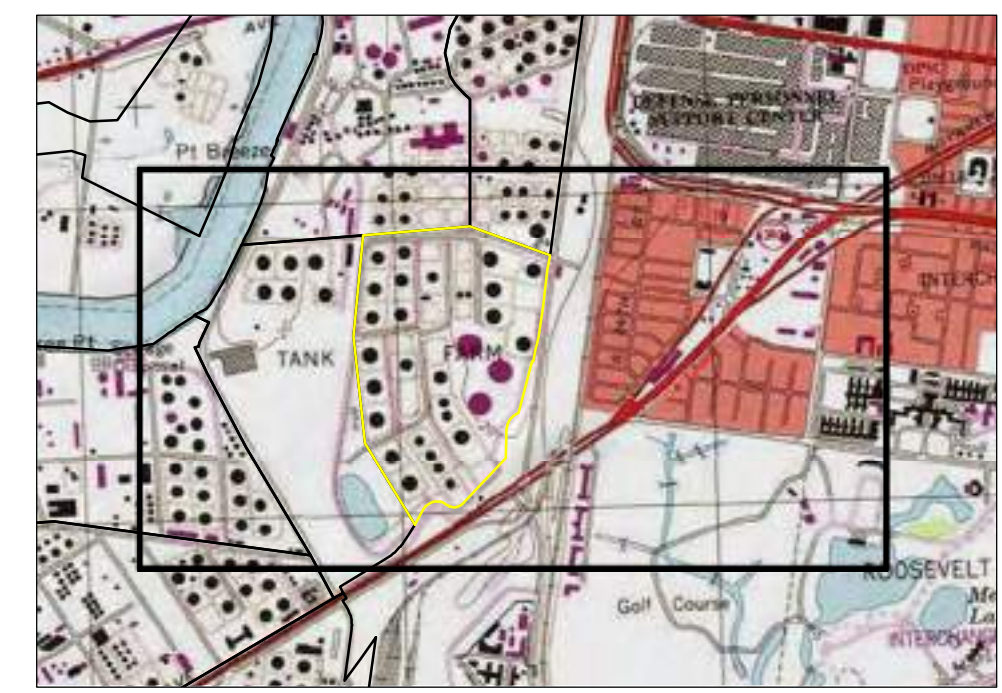
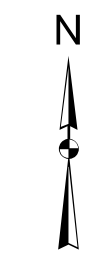
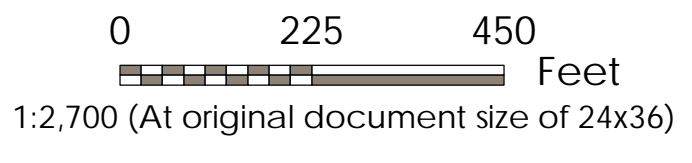
Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



Legend

- MONITORING/RECOVERY WELL
- 2012/2013 MTBE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- AREA OF INTEREST (AOI)
- AOI 4
- CROPPED GRID EXTENT
- 4.2 MAXIMUM CONCENTRATION OF MTBE [ug/L]
- ND NOT DETECTED

METHYL-TERTIARY BUTYL ETHER (MICROGRAMS PER LITER (ug/L))
 20 (STATEWIDE HEALTH STANDARD) - 200



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
 10-5

Title
 UNCONFINED AQUIFER MTBE MAXIMUM
 CONCENTRATION - 2012 TO 2013 DATA

213402602
 Prepared by GWC on 1/7/2017
 Technical Review by ADK on 3/9/2017
 Independent Review by JKD on 3/9/2017

Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet North American Vertical Datum of 1988 (NAVD 88)
2. Sources: Stantec
3. Labels denote well identifier and MTBE concentration in micrograms per liter (ug/L).
4. CIG-analytical data was interpolated using the Natural Neighbor gridding method in Surfer.
5. MTBE = methyl tertiary butyl ether
6. Aerial & Topo Image courtesy of USGS Earthstar Geographics. SIO © 2017 Microsoft Corporation. Copyright © 2013 National Geographic Society. I-cubed Microsoft product screen shot(s) reprinted with permission from Microsoft Corporation

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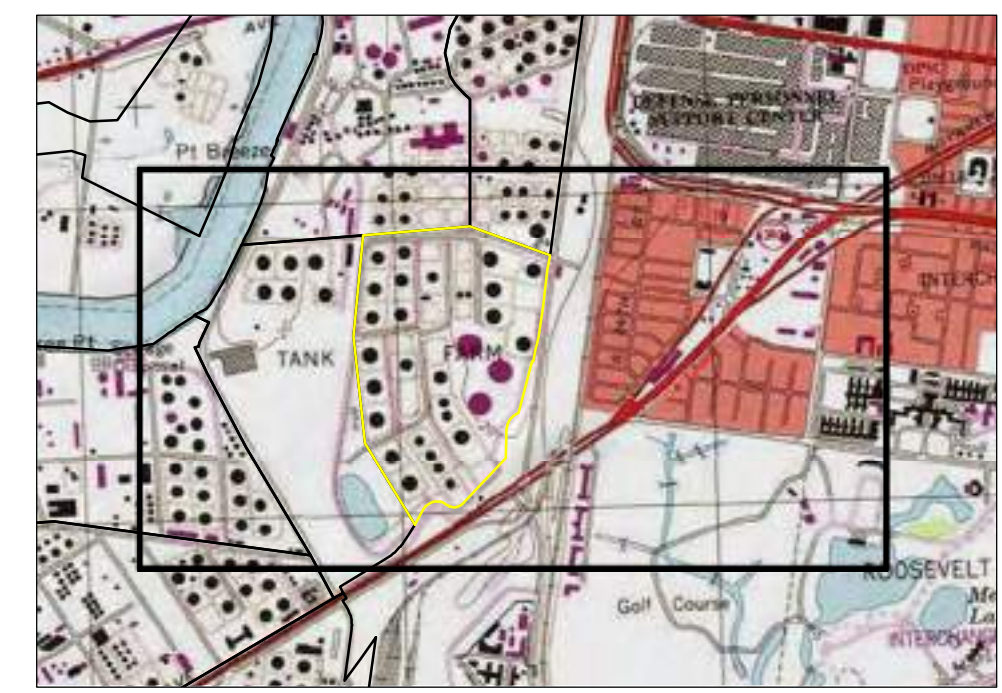
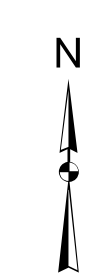
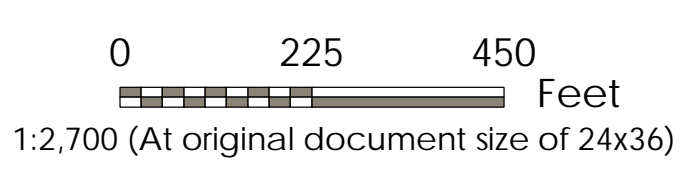
Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



Legend

- MONITORING/RECOVERY WELL
- 2014/2016 MTBE MAXIMUM CONCENTRATION (ug/L)
- APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
- AREA OF INTEREST (AOI)
- AOI 4
- CROPPED GRID EXTENT
- MAXIMUM CONCENTRATION OF MTBE [ug/L]
- NOT DETECTED

- METHYL-TERTIARY BUTYL ETHER (MICROGRAMS PER LITER (UG/L))
- 20 (STATEWIDE HEALTH STANDARD) - 200
 - 200 - 2,000
 - 2,000 - 20,000



Project Location
 City of Philadelphia,
 Philadelphia County,
 Pennsylvania

213402602
 Prepared by GWC on 1/7/2017
 Technical Review by ADK on 3/9/2017
 Independent Review by JKD on 3/9/2017

Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF
 EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145

Figure No.
10-6
 Title
**UNCONFINED AQUIFER MTBE MAXIMUM
 CONCENTRATION - 2014 TO 2016 DATA**

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		S-590										
		6-May-05	7-Apr-11	29-Jun-11	25-May-12	16-Aug-12	25-Oct-12	29-Mar-13	19-Aug-16	11-Oct-16		
BENZENE	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.00	<1.00	<1.00	
MTBE	<5	2	2	4	5	4.4	2.7	1.11	3.13			
LEAD	-	<1.0	<1.0	<1.0	<1.0	4.7	3.6	<2.00	<2.00			

		S-392D	
		19-May-14	3-Dec-14
BENZENE	<0.50	<0.50	<0.50
MTBE	<1.0	<1.0	<1.0
LEAD	<9.0	2.0 J	

		ARCO-1D									
		13-Jul-11	10-Jul-12	1-Apr-13	21-May-14	5-Dec-14	19-Aug-16	11-Oct-16			
BENZENE	290	380	1450	376	252	593	496				
MTBE	2	2	2.7	6.7	8.1	2.01	<10.0				
LEAD	<1.0	0.085 J	4.0	27.7	1.8 J	<2.00	<2.00				

		S-640										
		6-Apr-11	28-Jun-11	23-May-12	19-Jul-12	15-Aug-12	26-Oct-12	26-Mar-13	21-May-14	3-Dec-14		
BENZENE	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	
MTBE	5	6	5	3	6	5.9	4.8	3.9	6.4			
LEAD	<1.0	<1.0	<1.0	0.57	<1.0	<3.0	<3.0	<3.0	5.4	<3.0		

		S-1190										
		3-May-05	6-Apr-11	28-Jun-11	23-May-12	18-Aug-12	25-Oct-12	26-Mar-13	19-Aug-16	11-Oct-16		
BENZENE	<5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.00	2.20		
MTBE	<5	0.5 J	0.6 J	<1.0	0.5 J	<1.0	0.43 J	<1.00	<1.00			
LEAD	-	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	<3.0	<2.00	<2.00		

		S-390				
		26-Apr-16	30-Aug-16	31-Aug-16	11-Oct-16	11-Oct-16
BENZENE	<0.5	<1.00	<1.00	<1.00	<1.00	<1.00
MTBE	66	32.9	63.8	51.1	17.5	
LEAD	7.9 J	<2.00	<2.00	<2.00	<2.00	

		S-218D				
		26-Apr-16	30-Aug-16	31-Aug-16	11-Oct-16	11-Oct-16
BENZENE	<0.5	<1.00	<1.00	<1.00	<1.00	<1.00
MTBE	66	32.9	63.8	51.1	17.5	
LEAD	12.7 J	<2.00	<2.00	<2.00	<2.00	

		S-380									
		21-Oct-04	3-May-05	6-Apr-11	29-Jun-11	24-May-12	16-Aug-12	25-Oct-12	26-Mar-13	18-Aug-16	10-Oct-16
BENZENE	<1.0	<5	<0.5	<0.5	0.5 J	<0.5	<1.0	<1.0	<1.0	<1.00	<1.00
MTBE	<5.0	<5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.00	<1.00	
LEAD	<5.0	-	<1.0	<1.0	12.9	<1.0	<3.0	<3.0	<3.0	<2.00	<2.00

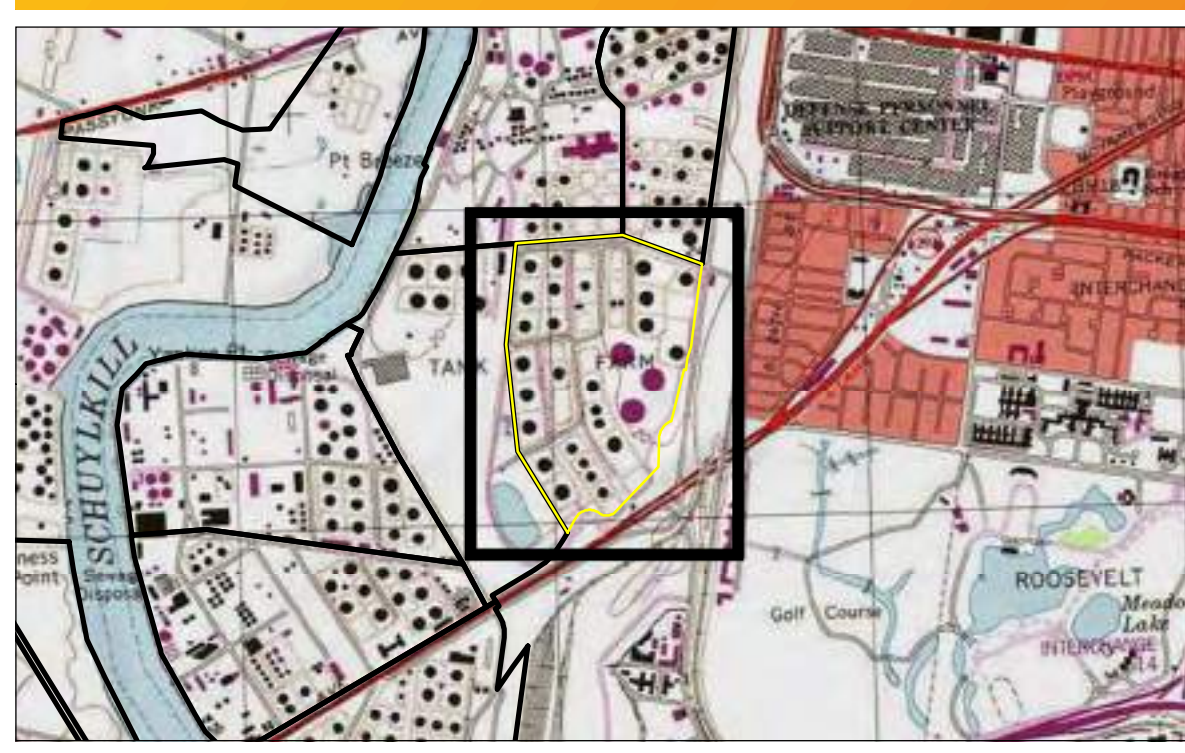
		S-380D									
		21-Oct-04	3-May-05	7-Apr-11	29-Jun-11	24-May-12	16-Aug-12	5-Feb-13	25-Mar-13	18-Aug-16	10-Oct-16
BENZENE	<1.0	<5	<0.5	100	43	60	12.7	57.5	106	7.28	2.58
MTBE	<5.0	<5	<0.5	<1.0	<0.5	<0.5	<1.0	<1.0	<1.00	<1.00	
LEAD	<5.0	-	<1.0	<1.0	2.6	<1.0	3.7	<3.0	1.7 J	<2.00	<2.00

		S-22									
		30-Nov-09	16-Jul-10	7-Apr-11	29-Jun-11	1-Jun-12	21-Aug-12	1-Nov-12	25-Mar-13	11-Jun-15	16-Dec-15
BENZENE	33	6	20	26	20	15	13.2	18.6	16.2	5.6	
MTBE	66	48	75	49	56	60	72.3	67	79.1	35.7	
LEAD	<1	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<3.0	<5.0	<3.0	

		S-13				
		30-Nov-09	24-May-12	16-Aug-12	1-Nov-12	29-Mar-13
BENZENE	<1	<0.5	<0.5	<0.50	<1.0	<0.50
MTBE	1	39	42	47.4	156	34.3
LEAD	2.3	<1.0	1.3	<5.0	5.3	<3.0

		S-8									
		25-Nov-09	21-Jul-10	7-Apr-11	29-Jun-11	24-May-12	16-Aug-12	1-Nov-12	29-Mar-13	11-Jun-15	30-Dec-15
BENZENE	61	<1	0.5 J	<0.5	4	9	0.50	2.0	1.1	<0.50	
MTBE	9	1	39	5	36	69	19.5	27.3	<1.0	<1.0	
LEAD	<1	1.1	1.0	<1.0	<1.0	<1.0	<5.0	<3.0	<5.0	<3.0	

Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



- Legend**
- LOWER AQUIFER MONITORING WELL
 - APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
 - AREA OF INTEREST (AOI)
 - AOI 4
 - 65 CONCENTRATION DETECTED IN GROUNDWATER SAMPLE EXCEEDS THE SHS (ug/L)
 - <1.0 COMPOUND NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT (ug/L)

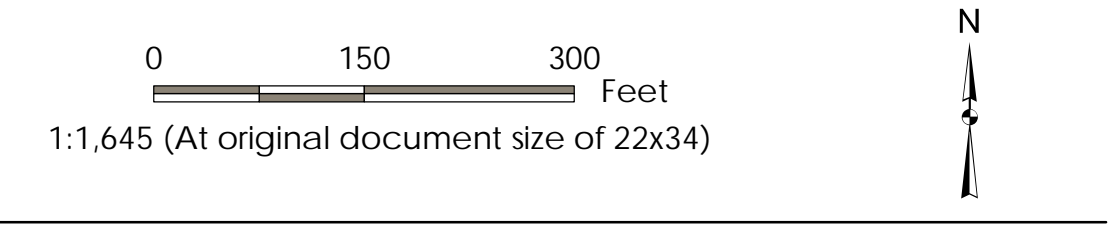
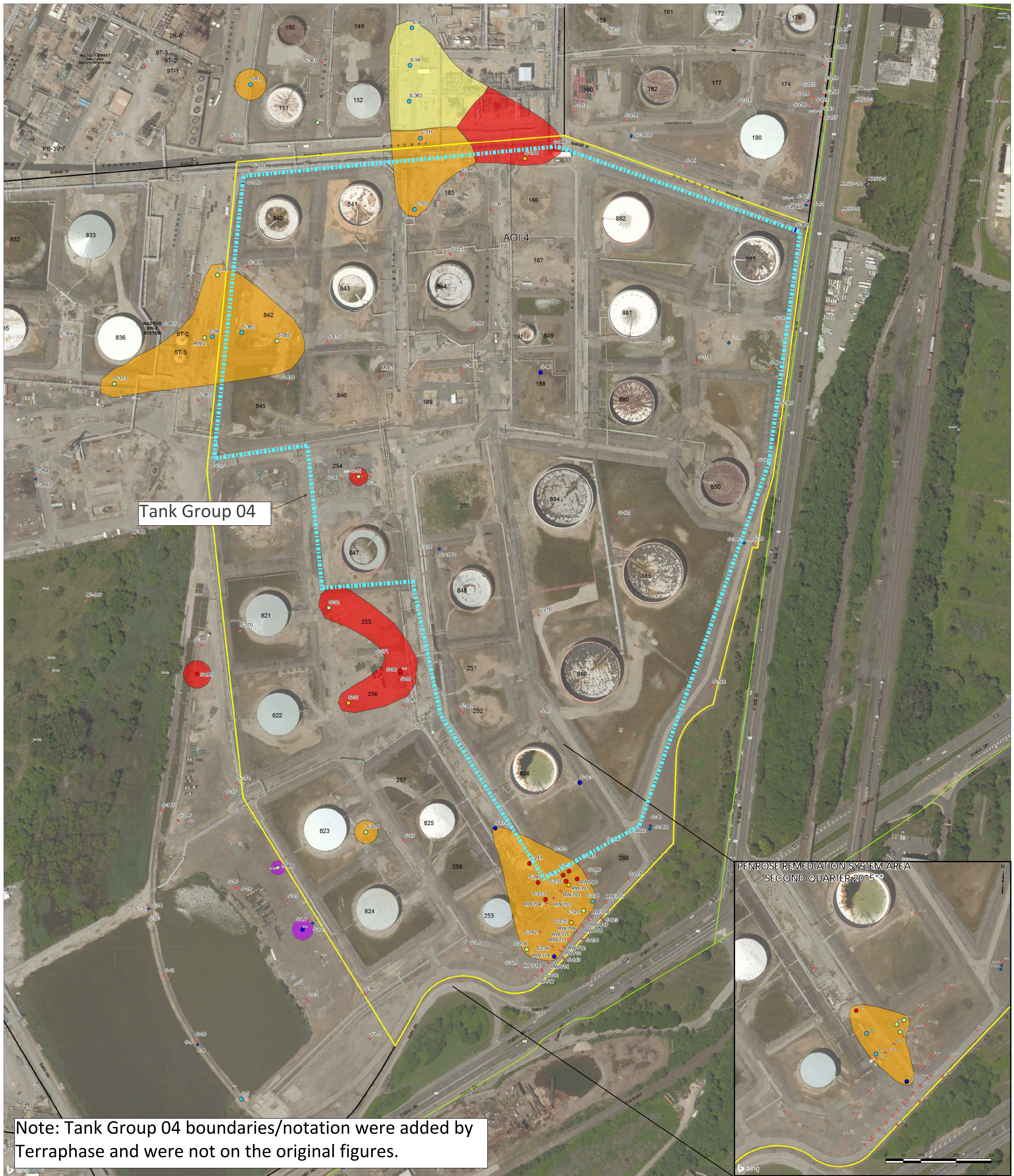


Figure No. **10-7**
 Title **LOWER AQUIFER GROUNDWATER EXCEEDANCES – BENZENE, MTBE, LEAD**
 Client/Project
 PHILADELPHIA REFINERY OPERATIONS, A SERIES OF EVERGREEN RESOURCES GROUP, LLC
 PHILADELPHIA REFINING COMPLEX
 3144 PASSYUNK AVENUE, PHILADELPHIA, PA 19145
 Project Location
 City of Philadelphia, Philadelphia County, Pennsylvania
 213402602
 Prepared by GWC on 2/14/2017
 Technical Review by ADK on 3/10/2017
 Independent Review by JKD on 3/10/2017

Notes

1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
2. Sources: Stantec
3. All concentrations shown in ug/L
4. Dissolved concentrations of metals shown
5. MTBE = methyl tertiary butyl ether
6. J. indicates an estimated value
7. Aerial & Topo © 2017 Microsoft Corporation
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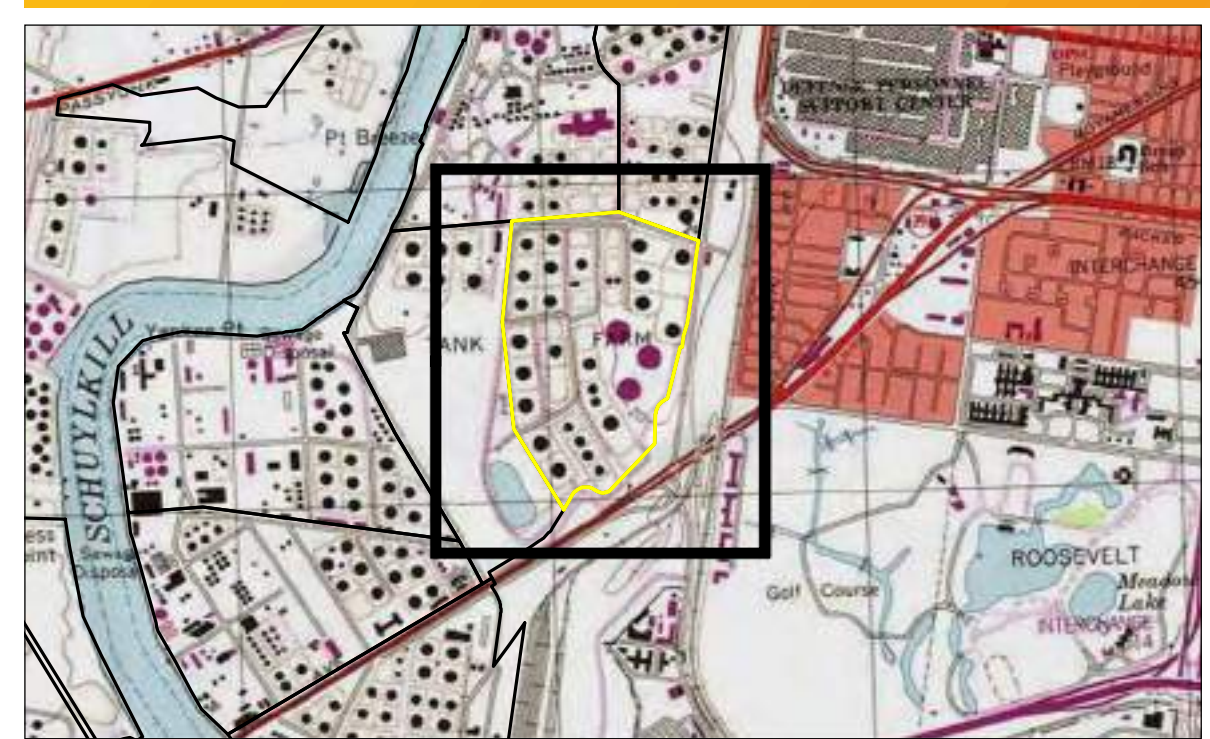




Tank Group 04

PENROSE REMEDIATION SYSTEM AREA
SECOND QUARTER 2015

Note: Tank Group 04 boundaries/notation were added by Terraphase and were not on the original figures.



Notes
 1. Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet
 2. Sources: Statistic
 3. Estimated LNAPL types established by Statistic using laboratory provided interpretations of product samples.
 4. Generalized LNAPL types established by Statistic using laboratory provided interpretations of product samples.
 5. Aerial & Topo © 2017 Microsoft Corporation
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- Legend**
- AOI 4 MONITORING WELL (INCLUDING SELECTED PERIMETER WELLS)
 - HYDROSTRATIGRAPHIC UNIT
 - UNCONFINED AQUIFER
 - LOWER AQUIFER
 - OTHER FACILITY MONITORING WELLS (OUTSIDE SCOPE OF THIS AOI 4 RIR)
 - OFFSITE MONITORING WELL - FORMER DSCP, PASSYUNK HOMES, STEEN, AND CSX PROPERTIES
 - APPROXIMATE LOCATION OF PHILADELPHIA WATER DEPARTMENT SEWER
 - AREA OF INTEREST (AOI)
 - AOI 4

- MAXIMUM OBSERVED LNAPL THICKNESS (2013-PRESENT)
(FEET OF LNAPL)**
- 0.01 - 0.10
 - 0.11 - 0.50
 - 0.51 - 1.00
 - 1.01 - 1.50
 - 1.51 +
- ESTIMATED LNAPL PLUME EXTENT
GENERALIZED LNAPL TYPE**
- LIGHT DISTILLATE
 - MIDDLE DISTILLATE
 - MIXES OF LIGHT/MIDDLE DISTILLATE
 - HEAVY DISTILLATE

**NOTE: IN THE PENROSE REMEDIATION SYSTEM AREA, THE INSET MAP INDICATES THE OBSERVED LNAPL THICKNESS AND ESTIMATED PLUME EXTENT IN MAY 2015 (SECOND QUARTER GAUGING).

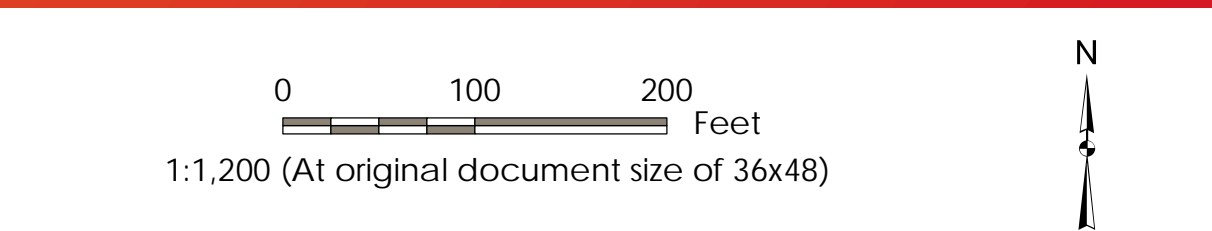


Figure No.
6-1
 Title
ESTIMATED LNAPL PLUME EXTENTS IN AOI 4 AND VICINITY

Client/Project
PHILADELPHIA REFINERY OPERATIONS
A SERIES OF EVERGREEN RESOURCES GROUP, LLC
3144 PASSYUNK AVENUE
PHILADELPHIA, PA 19145

Project Location
Philadelphia Refining Complex
No. 4 Tank Farm
Philadelphia, Pennsylvania

Prepared by ADK on 2/3/2017
 Technical Review by ANP on 2/28/2017
 Independent Review by AJM on 3/1/2017



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Appendix D

Historic Soil Sampling Results



Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4_BH-13-81	AOI4_BH-13-90	AOI4-BH-13-100	AOI4-BH-13-100	AOI4-BH-13-101	AOI4-BH-13-101	AOI4-BH-13-102
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI-4_BH-13-81_8-10'	AOI-4_BH-13-90_8-10'_031513	AOI4-BH-13-100_0-1_31813	AOI4-BH-13-100_5-6_31813	AOI4-BH-13-101_0-1_31813	AOI4-BH-13-101_7-8_31813	AOI4-BH-13-102_0-1_31813
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	8 - 10	8 - 10	0 - 1	5 - 6	0 - 1	7 - 8	0 - 1
Sample Date	Direct Contact		Direct Contact		3/20/2013	3/15/2013	3/18/2013	3/18/2013	3/18/2013	3/18/2013	3/18/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0046)	ND (0.0058)	ND (0.0044)	ND (0.0057)	ND (0.0051)	ND (0.0063)	ND (0.0056)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
Toluene	8000	76	650	9800	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0046)	ND (0.0058)	ND (0.0044)	ND (0.0057)	ND (0.0051)	ND (0.0063)	ND (0.0056)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0046)	ND (0.0058)	ND (0.0044)	ND (0.0057)	ND (0.0051)	ND (0.0063)	ND (0.0056)
Xylenes (total)	240	1.5	51	340	ND (0.00091)	ND (0.0012)	ND (0.00088)	ND (0.0011)	ND (0.001)	ND (0.0013)	ND (0.0011)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.036)	ND (0.12)	ND (0.038)	ND (0.037)	0.0182 J (0.037)	ND (0.04)	ND (0.036)
Benzo(a)anthracene	430	--	3200	--	ND (0.036)	ND (0.12)	0.0231 J (0.038)	ND (0.037)	0.0559 (0.037)	ND (0.04)	0.0292 J (0.036)
Benzo(a)pyrene	43	--	7.7	--	ND (0.036)	ND (0.12)	0.0243 J (0.038)	ND (0.037)	0.0449 (0.037)	ND (0.04)	ND (0.036)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.036)	ND (0.12)	0.0303 J (0.038)	ND (0.037)	0.0544 (0.037)	ND (0.04)	ND (0.036)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.036)	ND (0.12)	0.0274 J (0.038)	ND (0.037)	0.0408 (0.037)	ND (0.04)	ND (0.036)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.036)	ND (0.12)	0.0263 J (0.038)	ND (0.037)	0.0787 (0.037)	ND (0.04)	0.0338 J (0.036)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.036)	ND (0.12)	ND (0.038)	ND (0.037)	ND (0.037)	ND (0.04)	ND (0.036)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.036)	ND (0.12)	ND (0.038)	ND (0.037)	ND (0.037)	ND (0.04)	ND (0.036)
Phenanthrene	4600	--	14000	--	ND (0.036)	ND (0.12)	0.0235 J (0.038)	ND (0.037)	0.104 (0.037)	ND (0.04)	0.0401 (0.036)
Pyrene	4600	--	14000	--	ND (0.036)	ND (0.12)	0.0297 J (0.038)	ND (0.037)	0.12 (0.037)	ND (0.04)	0.0476 (0.036)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	2.5 (2.3)	8.6 (1.1)	399 (2.3)	12.8 (2.4)	494 (2.4)	10.2 (2.1)	1620 (2.4)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-BH-13-102	AOI4-BH-13-103	AOI4-BH-13-103	AOI4-BH-13-104	AOI4-BH-13-104	AOI4-BH-13-82	AOI4-BH-13-84
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-13-102_6-7_31813	AOI4-BH-13-103_0-1_31813	AOI4-BH-13-103_2-3_31813	AOI4-BH-13-104_0-5_31513	AOI4-BH-13-104_6-7_31513	AOI4-BH-13-82_6.5-7_031813	AOI4-BH-13-84_5.5-6_031513
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	6 - 7	0 - 1	2 - 3	0 - 0.5	6 - 7	6.5 - 7	5.5 - 6
Sample Date	Direct Contact		Direct Contact		3/18/2013	3/18/2013	3/18/2013	3/15/2013	3/15/2013	3/18/2013	3/15/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	<u>1.96 (0.27)</u>	ND (0.099)	ND (0.00088)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.005)	ND (0.0076)	ND (0.0055)	ND (0.005)	<u>7.31 (1.4)</u>	0.129 J (0.5)	ND (0.0044)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	<u>29.5 (0.27)</u>	0.186 (0.099)	ND (0.00088)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	ND (0.27)	ND (0.099)	ND (0.00088)
Toluene	8000	76	650	9800	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	6.55 (0.27)	ND (0.099)	ND (0.00088)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.005)	ND (0.0076)	ND (0.0055)	ND (0.005)	<u>75.4 (5.5)</u>	0.362 J (0.5)	ND (0.0044)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.005)	ND (0.0076)	ND (0.0055)	ND (0.005)	<u>27.3 (1.4)</u>	0.147 J (0.5)	ND (0.0044)
Xylenes (total)	240	1.5	51	340	ND (0.001)	ND (0.0015)	ND (0.0011)	ND (0.001)	<u>65.6 (0.27)</u>	0.339 (0.099)	ND (0.00088)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.037)	0.0731 (0.038)	ND (0.04)	ND (0.12)	2.56 (0.12)	ND (0.04)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.037)	0.0807 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.037)	0.0794 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.037)	0.0607 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.037)	0.111 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.037)	0.122 (0.038)	ND (0.04)	ND (0.12)	ND (0.12)	ND (0.04)	ND (0.12)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.037)	ND (0.038)	ND (0.04)	ND (0.12)	6.14 (0.12)	ND (0.04)	ND (0.12)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.037)	0.0654 (0.038)	ND (0.04)	ND (0.12)	<u>21.2 (0.61)</u>	ND (0.04)	ND (0.12)
Phenanthrene	4600	--	14000	--	ND (0.037)	0.285 (0.038)	0.0341 J (0.04)	ND (0.12)	21.7 (0.61)	ND (0.04)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.037)	0.261 (0.038)	ND (0.04)	ND (0.12)	0.697 (0.12)	ND (0.04)	ND (0.12)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	9.2 (2.1)	3020 (2.5)	34 (2)	7 (1.1)	7.9 (1.1)	13.3 (2.5)	6.6 (1)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
5 Underlined concentrations exceed the Routine Worker VI.
6 Italicized concentrations exceed the Construction Worker Direct Contact.
7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-BH-13-85	AOI4-BH-13-86	AOI4-BH-13-86	AOI4-BH-13-88	AOI4-BH-13-88	AOI4-BH-13-88	AOI4-BH-13-89
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-13-85_5.5-6_031513	AOI4-BH-13-86_2-2.5_031513	AOI4-BH-13-86_5.5-6_031513	AOI4-BH-13-88_1.5-2_31413	AOI4-BH-13-88_3.5-4_031413	AOI4-BH-13-88_5.5-6_031413	AOI4-BH-13-89_5.5-6_031913
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	2 - 2.5	5.5 - 6	1.5 - 2	3.5 - 4	5.5 - 6	5.5 - 6
Sample Date	Direct Contact		Direct Contact		3/15/2013	3/15/2013	3/15/2013	3/14/2013	3/14/2013	3/14/2013	3/19/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.00088)	ND (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0044)	0.0143 (0.0043)	ND (0.0044)	0.694 (0.55)	0.993 (0.5)	ND (0.0051)	ND (0.0045)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.00088)	0.0206 (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00088)	ND (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
Toluene	8000	76	650	9800	ND (0.00088)	ND (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0044)	0.0437 (0.0043)	ND (0.0044)	<u>13.6 (0.55)</u>	<u>6.95 (0.5)</u>	ND (0.0051)	ND (0.0045)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0044)	0.0169 (0.0043)	ND (0.0044)	ND (0.55)	ND (0.5)	ND (0.0051)	ND (0.0045)
Xylenes (total)	240	1.5	51	340	ND (0.00088)	0.0109 (0.00085)	ND (0.00088)	ND (0.11)	ND (0.1)	ND (0.001)	ND (0.00089)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	0.0692 J (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(a)pyrene	43	--	7.7	--	ND (0.12)	ND (0.12)	0.0431 J (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	0.122 (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	0.0634 J (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.12)	ND (0.12)	ND (0.11)	<u>2.53 (0.12)</u>	<u>0.894 (0.12)</u>	ND (0.12)	ND (0.037)
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	0.107 J (0.11)	0.622 (0.12)	0.393 (0.12)	ND (0.12)	ND (0.037)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	0.147 (0.11)	0.0608 J (0.12)	ND (0.12)	ND (0.12)	ND (0.037)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	6.9 (1.1)	7.8 (1.1)	2140 (5.4)	10 (1.2)	7.1 (1.1)	6.2 (1.1)	6.7 (2)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-BH-13-92	AOI4-BH-13-93	AOI4-BH-13-95	AOI4-BH-13-97	AOI4-BH-13-97	AOI4-BH-13-98	AOI4-BH-13-98
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-13-92_8-10'	AOI4-BH-13-93_8-10'	AOI4-BH-13-95_8-10'	AOI4-BH-13-97-0-1_31413	AOI4-BH-13-97-8.5-9.5_31413	AOI4-BH-13-98_6-7_31413	AOI4-BH-13-98-1-2_31413
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	8 - 10	8 - 10	8 - 10	0 - 1	8.5 - 9.5	6 - 7	1 - 2
Sample Date	Direct Contact		Direct Contact		3/18/2013	3/18/2013	3/18/2013	3/14/2013	3/14/2013	3/14/2013	3/14/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	0.127 (0.00096)	ND (0.001)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0045)	ND (0.0038)	ND (0.0045)	ND (0.0047)	ND (0.005)	0.015 (0.0048)	ND (0.0051)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	0.581 (0.098)	ND (0.001)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	ND (0.00096)	ND (0.001)
Toluene	8000	76	650	9800	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	0.702 (0.098)	ND (0.001)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0045)	ND (0.0038)	ND (0.0045)	ND (0.0047)	ND (0.005)	<u>1.15 (0.49)</u>	ND (0.0051)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0045)	ND (0.0038)	ND (0.0045)	ND (0.0047)	ND (0.005)	0.0948 (0.0048)	ND (0.0051)
Xylenes (total)	240	1.5	51	340	ND (0.00089)	ND (0.00077)	ND (0.0009)	ND (0.00095)	ND (0.001)	<u>2.42 (0.098)</u>	ND (0.001)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.105 J (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.0823 J (0.12)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.189 (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.0753 J (0.12)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.112 J (0.12)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.12)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.12)
Phenanthrene	4600	--	14000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.0619 J (0.12)
Pyrene	4600	--	14000	--	ND (0.071)	ND (0.036)	ND (0.033)	ND (0.12)	ND (0.1)	ND (0.12)	0.201 (0.12)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	11.6 (2.4)	10.7 (2.3)	5.5 (2.3)	81.5 (1.1)	2.9 (1)	8 (1.1)	136 (1.1)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-BH-13-99	AOI4-BH-13-99	AOI4-BH-16-003	AOI4-BH-16-003	AOI4-BH-16-004	AOI4-BH-16-004	AOI4-BH-16-008
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-13-99_1.5-2_031813	AOI4-BH-13-99_2.5-3_031813	AOI4-BH-16-003-0-2-20160824	AOI4-BH-16-003-14-15-20160824	AOI4-BH-16-004-0-2-20160824	AOI4-BH-16-004-14-15-20160824	AOI4-BH-16-008-0-2-20160614
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	1.5 - 2	2.5 - 3	0 - 2	14 - 15	0 - 2	14 - 15	0 - 2
Sample Date	Direct Contact		Direct Contact		3/18/2013	3/18/2013	8/24/2016	8/24/2016	8/24/2016	8/24/2016	6/14/2016
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.00024 J (0.0012)	0.245 (0.15)	ND (0.00126)	0.00122 (0.0011)	ND (0.00121)	0.00135 (0.0012)	NA
sec-Butylbenzene	--	--	--	--	NA	NA	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)	NA
tert-Butylbenzene	--	--	--	--	NA	NA	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)	NA
Cumene	1000	6.1	87	1000	0.00071 J (0.0059)	0.122 J (0.73)	ND (0.0126)	ND (0.011)	ND (0.0121)	ND (0.012)	NA
Cyclohexane	--	--	--	--	NA	NA	ND (0.00126)	0.0291 (0.0011)	ND (0.00121)	0.00201 (0.0012)	NA
Ethyl Benzene	2300	15	1300	820	ND (0.0012)	0.11 J (0.15)	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)	NA
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0012)	ND (0.15)	0.00155 (0.00126)	0.0177 (0.0011)	ND (0.00121)	ND (0.0012)	NA
Toluene	8000	76	650	9800	ND (0.0012)	0.182 (0.15)	ND (0.00629)	ND (0.0055)	ND (0.00604)	ND (0.00602)	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0059)	0.169 J (0.73)	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0059)	0.0611 J (0.73)	ND (0.00126)	ND (0.0011)	ND (0.00121)	ND (0.0012)	NA
Xylenes (total)	240	1.5	51	340	ND (0.0012)	0.671 (0.15)	ND (0.00377)	ND (0.0033)	ND (0.00362)	ND (0.00361)	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Anthracene	46000	--	46000	--	0.0675 (0.039)	ND (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Benzo(a)anthracene	430	--	3200	--	0.111 (0.039)	0.0652 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Benzo(a)pyrene	43	--	7.7	--	0.157 (0.039)	0.0875 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Benzo(b)fluoranthene	430	--	3200	--	0.109 (0.039)	0.0954 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Benzo(g,h,i)perylene	4600	--	14000	--	0.215 (0.039)	0.109 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Chrysene	43000	--	320000	--	0.145 (0.039)	0.114 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Fluoranthene	--	--	--	--	NA	NA	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Fluorene	6200	--	18000	--	ND (0.039)	0.191 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Naphthalene	41	0.54	6	27	0.0334 J (0.039)	0.0933 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Phenanthrene	4600	--	14000	--	0.237 (0.039)	0.38 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Pyrene	4600	--	14000	--	0.196 (0.039)	0.14 (0.037)	ND (0.0415)	ND (0.0363)	ND (0.0398)	ND (0.0397)	NA
Metals											
Cobalt	--	--	--	--	NA	NA	9.05 (1.26)	7.02 (1.1)	8.42 (1.21)	9.13 (1.2)	NA
Lead	2240	--	2240	45000	11600 (12)	1870 (2.4)	8.18 (0.629)	6.69 (0.55)	12.2 (0.604)	10.8 (0.602)	1760 J (0.561)
Nickel	6200	--	700	1700	NA	NA	11.6 (2.52)	11.3 (2.2)	12 (2.41)	6.2 (2.41)	NA
Vanadium	1600	--	350	2800	NA	NA	25.9 (2.52)	22.1 (2.2)	39 (2.41)	21.9 (2.41)	NA
Zinc	--	--	--	--	NA	NA	29.9 (6.29)	29 (5.5)	46.2 (6.04)	17.9 (6.02)	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-BH-16-009	AOI4-BH-16-010	AOI4-BH-16-012	AOI4-BH-16-013	AOI4-BH-16-013	AOI4-BH-16-014	AOI4-BH-16-014
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-16-009-0-2-20160614	AOI4-BH-16-010-0-2-20160614	AOI4-BH-16-012-0-2-20160613	AOI4-BH-16-013-0-2-20160630	AOI4-BH-16-013-13-14-20160630	AOI4-BH-16-014-0-2-20160629	AOI4-BH-16-014-13-14-20160629
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 2	0 - 2	0 - 2	0 - 2	13 - 14	0 - 2	13 - 14
Sample Date	Direct Contact		Direct Contact		6/14/2016	6/14/2016	6/13/2016	6/30/2016	6/30/2016	6/29/2016	6/29/2016
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	0.00349 (0.00118)	ND (0.0528)	0.0626 (0.00114)	ND (0.122)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	0.0208 (0.00118)	0.405 (0.0528)	ND (0.00114)	0.837 (0.122)
tert-Butylbenzene	--	--	--	--	NA	NA	NA	0.00214 (0.00118)	0.131 (0.0528)	ND (0.00114)	ND (0.122)
Cumene	1000	6.1	87	1000	NA	NA	NA	0.0415 (0.0118)	ND (0.528)	ND (0.0114)	ND (1.22)
Cyclohexane	--	--	--	--	NA	NA	NA	0.0443 (0.00118)	0.306 (0.0528)	0.00987 (0.00114)	ND (0.122)
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	ND (0.00118)	ND (0.0528)	0.00835 (0.00114)	ND (0.122)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	0.0452 (0.00118)	0.205 (0.0528)	0.0017 (0.00114)	ND (0.122)
Toluene	8000	76	650	9800	NA	NA	NA	ND (0.00589)	ND (0.264)	ND (0.00568)	ND (0.611)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	ND (0.00118)	0.327 (0.0528)	ND (0.00114)	ND (0.122)
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	ND (0.00118)	0.0551 (0.0528)	ND (0.00114)	ND (0.122)
Xylenes (total)	240	1.5	51	340	NA	NA	NA	ND (0.00353)	ND (0.159)	ND (0.00341)	ND (0.366)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Anthracene	46000	--	46000	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Chrysene	43000	--	320000	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Fluoranthene	--	--	--	--	NA	NA	NA	0.33 (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Fluorene	6200	--	18000	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Naphthalene	41	0.54	6	27	NA	NA	NA	ND (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Phenanthrene	4600	--	14000	--	NA	NA	NA	0.262 (0.194)	0.303 (0.21)	ND (0.375)	ND (0.0403)
Pyrene	4600	--	14000	--	NA	NA	NA	0.292 (0.194)	ND (0.21)	ND (0.375)	ND (0.0403)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	10.2 (1.18)	7.43 (1.27)	8.37 (1.14)	8.32 (1.22)
Lead	2240	--	2240	45000	1490 J (0.583)	160 J (0.574)	1080 J (0.678)	255 (0.589)	65.1 (0.637)	57.6 (0.568)	13.9 (0.611)
Nickel	6200	--	700	1700	NA	NA	NA	18.6 (2.35)	12.1 (2.55)	14.6 (2.27)	13.4 (2.44)
Vanadium	1600	--	350	2800	NA	NA	NA	38.2 (2.35)	30.1 (2.55)	47.5 (2.27)	37.1 (2.44)
Zinc	--	--	--	--	NA	NA	NA	102 (5.89)	113 (6.37)	80.2 (5.68)	37.6 (6.11)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
 - 6 Italicized concentrations exceed the Construction Worker Direct Contact.
 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-BH-16-015	AOI4-BH-16-015	AOI4-BH-16-018	AOI4-BH-16-018	AOI4-BH-16-022	AOI4-GP-1	AOI4-GP-1
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-BH-16-015-0-2-20160622	AOI4-BH-16-015-13-15-20160622	AOI4-BH-16-018-0-2-20160628	AOI4-BH-16-018-14-15-20160628	AOI4-BH-16-022-0-2-20160623	GP-1(1.5-2)	GP-1(15-15.5)
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 2	13 - 15	0 - 2	14 - 15	0 - 2	1.5 - 2	15 - 15.5
Sample Date	Direct Contact		Direct Contact		6/22/2016	6/22/2016	6/28/2016	6/28/2016	6/23/2016	5/28/2003	5/28/2003
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.0023 (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA	ND (0.25)	0.11 J
sec-Butylbenzene	--	--	--	--	0.00291 (0.0012)	ND (0.00107)	ND (0.00129)	17.5 (0.202)	NA	NA	NA
tert-Butylbenzene	--	--	--	--	ND (0.0012)	ND (0.00107)	ND (0.00129)	1.06 (0.202)	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.012)	ND (0.0107)	ND (0.0129)	<u>7.88 (2.02)</u>	NA	NA	NA
Cyclohexane	--	--	--	--	0.00525 (0.0012)	ND (0.00107)	ND (0.00129)	8.1 (0.202)	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.00601)	ND (0.00533)	ND (0.00646)	ND (1.01)	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0012)	ND (0.00107)	ND (0.00129)	ND (0.202)	NA	NA	NA
Xylenes (total)	240	1.5	51	340	ND (0.00361)	ND (0.0032)	ND (0.00388)	ND (0.605)	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	ND (0.198)	ND (0.0352)	ND (0.0426)	0.272 (0.0392)	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	0.5	ND (0.36)
Benzo(a)anthracene	430	--	3200	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	2	ND (0.36)
Benzo(a)pyrene	43	--	7.7	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	2.2	ND (0.36)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	1.8	ND (0.36)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	0.67	ND (0.36)
Benzo(k)fluoranthene	4300	--	32000	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	1.8	ND (0.36)
Fluoranthene	--	--	--	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.198)	ND (0.0352)	ND (0.0426)	0.426 (0.0392)	NA	ND (0.4)	0.4
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	0.2 J	<u>3.7</u>
Phenanthrene	4600	--	14000	--	ND (0.198)	ND (0.0352)	ND (0.0426)	0.76 (0.0392)	NA	1.7	0.99
Pyrene	4600	--	14000	--	ND (0.198)	ND (0.0352)	ND (0.0426)	ND (0.0392)	NA	1.8	ND (0.36)
Metals											
Cobalt	--	--	--	--	9.36 (1.2)	4.92 (1.07)	8.76 (1.29)	5.96 (1.19)	NA	NA	NA
Lead	2240	--	2240	45000	310 (0.601)	17.9 (0.533)	6.97 (0.646)	5.91 (0.593)	644 (0.617)	NA	NA
Nickel	6200	--	700	1700	29.4 (2.41)	11.6 (2.13)	12.8 (2.58)	10.2 (2.37)	NA	NA	NA
Vanadium	1600	--	350	2800	206 (2.41)	10.3 (2.13)	27.3 (2.58)	14.9 (2.37)	NA	NA	NA
Zinc	--	--	--	--	696 (6.01)	38.3 (5.33)	30.7 (6.46)	29.4 (5.93)	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-GP-2	AOI4-GP-2	AOI4-GP-3	AOI4-GP-3	AOI4-GP-4	AOI4-GP-4	AOI4-GP-5
Field Sample ID	Routine	Routine	Construction	Soil Migration	GP-2(1.5-2)	GP-2(15-15.5)	GP-3(0-2)	GP-3(15-15.5)	GP-4(1.5-2)~5/28/03~75559	GP-4(15-15.5)	GP-5(1.5-2)~5/28/03~75559
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	1.5 - 2	15 - 15.5	0 - 2	15 - 15.5	1.5 - 2	15 - 15.5	1.5 - 2
Sample Date	Direct Contact		Direct Contact		5/28/2003	5/28/2003	5/28/2003	5/28/2003	5/28/2003	5/28/2003	5/28/2003
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.23)	ND (0.26)	ND (0.31)	ND (0.25)	ND (0.24)	ND (0.25)	ND (0.31)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (1.8)	ND (0.36)	0.31 J	ND (0.36)	1.9 J	ND (0.37)	0.61 J
Benzo(a)anthracene	430	--	3200	--	5	ND (0.36)	1.6	ND (0.36)	4.1	ND (0.37)	2.1
Benzo(a)pyrene	43	--	7.7	--	4.8	ND (0.36)	1.4	ND (0.36)	3.5	ND (0.37)	2.3
Benzo(b)fluoranthene	430	--	3200	--	3.8	ND (0.36)	1.1	ND (0.36)	3.2	ND (0.37)	1.8
Benzo(g,h,i)perylene	4600	--	14000	--	1.7 J	ND (0.36)	0.41 J	ND (0.36)	1.2 J	ND (0.37)	0.88 J
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	4.4	ND (0.36)	1.4	ND (0.36)	4	ND (0.37)	2
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (1.8)	0.2 J	ND (0.42)	ND (0.36)	ND (0.19)	0.27 J	ND (0.95)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	<u>0.72</u>	<u>2.2</u>	ND (0.31)	0.42	ND (0.24)	0.24 J	ND (0.31)
Phenanthrene	4600	--	14000	--	2.1	0.48	1.1	0.35 J	10	0.69	1.9
Pyrene	4600	--	14000	--	5.4	ND (0.36)	2	ND (0.36)	7.3	ND (0.37)	2.4
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	AOI4-GP-5	AOI4-GP-6	AOI4-GP-6	AOI4-GP-7	AOI4-GP-7	AOI4-GP-7	AOI4-GP-8				
Field Sample ID	GP-5(15-15.5)	GP-6(1.5-2)	GP-6(15.5-16)	GP-7(1.5-2)	GP-7(15.5-16)	GP-7(6.5-7)	GP-8(1.5-2)				
Collection Depth (ft bgs)	15 - 15.5	1.5 - 2	15.5 - 16	1.5 - 2	15.5 - 16	6.5 - 7	1.5 - 2				
Sample Date	5/28/2003	5/28/2003	5/28/2003	5/29/2003	5/29/2003	5/29/2003	5/29/2003				
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.14 J	ND (0.27)	ND (0.26)	ND (0.26)	0.34 J	0.16 J	ND (0.28)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.37)	1.3	ND (0.42)	ND (2)	ND (3.7)	ND (4.7)	ND (8.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.37)	2.7	ND (0.42)	ND (2)	ND (3.7)	ND (4.7)	ND (8.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.37)	2.3	ND (0.42)	ND (2)	ND (3.7)	ND (4.7)	ND (8.1)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.37)	2	ND (0.42)	1.3 J	ND (3.7)	ND (4.7)	ND (8.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.37)	0.77 J	ND (0.42)	ND (2)	ND (3.7)	ND (4.7)	ND (8.1)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.37)	2.4	ND (0.42)	ND (2)	ND (3.7)	ND (4.7)	ND (8.1)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.25 J	0.5 J	ND (0.42)	ND (2)	2.2 J	17	7.6 J
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.37	0.13 J	ND (0.26)	ND (0.26)	<u>25</u>	<u>9.4</u>	<u>40 D</u>
Phenanthrene	4600	--	14000	--	0.66	4.7	ND (0.42)	ND (2)	5	49	22
Pyrene	4600	--	14000	--	ND (0.37)	3.6	ND (0.42)	ND (2)	ND (3.7)	10	4.1 J
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	AOI4-GP-8	AOI4-GP-8	AOI4-GP-9	AOI4-PE-01	AOI4-PE-02	AOI4-PE-03	AOI4-PE-04				
Field Sample ID	GP-8(15-15.5)	GP-8(7.5-8)	GP-9(Surface)	AOI4-PE-01	AOI4-PE-02	AOI4-PE-03	AOI4-PE-04				
Collection Depth (ft bgs)	15 - 15.5	7.5 - 8	0	2 - 2.5	2	2 - 2.5	2				
Sample Date	5/29/2003	5/29/2003	5/29/2003	7/13/2018	7/13/2018	7/13/2018	7/13/2018				
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.24)	ND (0.26)	0.054 J	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.37)	0.5 J	ND (57)	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	ND (0.37)	ND (0.76)	ND (57)	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	ND (0.37)	ND (0.76)	ND (57)	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	ND (0.37)	ND (0.76)	ND (57)	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.37)	ND (0.76)	ND (57)	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.37)	0.63 J	ND (57)	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.37)	0.82	ND (57)	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.24)	<u>0.91</u>	0.46	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	0.38	3.4	230	NA	NA	NA	NA
Pyrene	4600	--	14000	--	ND (0.37)	1.3	37 J	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	8400 (8.23)	734 (1.44)	3490 (8.65)	36800 (37.9)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	AOI4-PE-05	AOI4-PE-06	AOI4-PE-07	AOI4-PE-08	AOI4-PE-09	AOI4-PE-10	AOI4-PE-11
Field Sample ID	AOI4-PE-05	AOI4-PE-06	AOI4-PE-07	AOI4-PE-08	AOI4-PE-09	AOI4-PE-10	AOI4-PE-11
Collection Depth (ft bgs)	0.5 - 1	0.5	1 - 1.5	1	0.5	1	1 - 1.5
Sample Date	7/13/2018	7/13/2018	7/13/2018	7/13/2018	7/23/2018	7/23/2018	7/23/2018
Comments							
Volatile Organic Compounds							
Benzene	63	0.46	8.7	98	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA
Semivolatile Organic Compounds							
Acenaphthene	9300	--	9200	--	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA
Metals							
Cobalt	--	--	--	--	NA	NA	NA
Lead	2240	--	2240	45000	5690 (6.11)	6380 (7.27)	11.3 (1.73)
Nickel	6200	--	700	1700	NA	NA	134 (1.61)
Vanadium	1600	--	350	2800	NA	NA	529 (6.23)
Zinc	--	--	--	--	NA	NA	4530 (6.53)
							7460 (12.6)

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

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Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-PE-12	AOI4-PE-13	AOI4-PE-14	AOI4-PE-15	AOI4-PE-16	AOI4-PE-17	AOI4-PE-18
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-12	AOI4-PE-13	AOI4-PE-14	AOI4-PE-15	AOI4-PE-16	AOI4-PE-17	AOI4-PE-18
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2 - 2.5	2	2
Sample Date	Direct Contact		Direct Contact		7/23/2018	7/23/2018	7/30/2018	7/30/2018	7/30/2018	7/30/2018	8/7/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	27100 (76.1)	16000 (31.7)	28600 (27.4)	55.3 (1.36)	105 (1.43)	4240 (13.2)	25600 (62.4)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

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ND - Not Detected
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Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-PE-19	AOI4-PE-20	AOI4-PE-21	AOI4-PE-22	AOI4-PE-23	AOI4-PE-24	AOI4-PE-25
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-19	AOI4-PE-20	AOI4-PE-21	AOI4-PE-22	AOI4-PE-23	AOI4-PE-24	AOI4-PE-25
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2	2	2
Sample Date	Direct Contact		Direct Contact		8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	31700 (62)	38300 (73.5)	35600 (71.4)	7500 (12.7)	132 (1.23)	295 (1.36)	1020 (1.42)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

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Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-PE-26	AOI4-PE-27	AOI4-PE-28	AOI4-PE-29	AOI4-PE-30	AOI4-PE-31	AOI4-PE-32
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-26	AOI4-PE-27	AOI4-PE-28	AOI4-PE-29	AOI4-PE-30	AOI4-PE-31	AOI4-PE-32
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2	2	2
Sample Date	Direct Contact		Direct Contact		8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018	8/7/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	48.6 (1.85)	162 (1.82)	126 (1.84)	855 (1.76)	97.5 (1.77)	28100 (37)	17400 (34.6)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
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 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

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Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-PE-33	AOI4-PE-41	AOI4-PE-43	AOI4-PE-44	AOI4-PE-45	AOI4-PE-46	AOI4-PE-49
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-33	AOI4-PE-41	AOI4-PE-43	AOI4-PE-44	AOI4-PE-45	AOI4-PE-46	AOI4-PE-49
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2	2	2
Sample Date	Direct Contact		Direct Contact		8/7/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	82.8 (1.76)	368 (1.77)	8050 (7.06)	66400 (100)	2720 (6.41)	64.4 (1.77)	205 (1.69)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

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Table D1
Historical Soil Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					AOI4-PE-51	AOI4-PE-52	AOI4-PE-53	AOI4-PE-54	AOI4-PE-55	AOI4-PE-56	AOI4-PE-57
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-PE-51	AOI4-PE-52	AOI4-PE-53	AOI4-PE-54	AOI4-PE-55	AOI4-PE-56	AOI4-PE-57
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	2	2	2	2	2	2	2
Sample Date	Direct Contact		Direct Contact		8/9/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018	8/9/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	13300 (35.1)	3310 (8.68)	6310 (8.88)	17400 (16.8)	11800 (16.2)	183 (9.02)	6040 (13.3)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

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Table D1
Historical Soil Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	AOI4-PE-58	AOI4-PE-60	AOI4-PE-61	AOI4-PE-62	AOI4-PE-63	AOI4-PE-64	AOI4-PE-65
Field Sample ID	AOI4-PE-58	AOI4-PE-60	AOI4-PE-61	AOI4-PE-62	AOI4-PE-63	AOI4-PE-64	AOI4-PE-65
Collection Depth (ft bgs)	2	2	2	2	2	2	2
Sample Date	8/9/2018	8/15/2018	8/15/2018	8/15/2018	8/15/2018	8/16/2018	8/16/2018
Comments							
Volatile Organic Compounds							
Benzene	63	0.46	8.7	98	NA	NA	NA
sec-Butylbenzene	--	--	--	--	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA
Semivolatile Organic Compounds							
Acenaphthene	9300	--	9200	--	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA
Naphthalene	41	0.54	6	27	NA	NA	NA
Phenanthrene	4600	--	14000	--	NA	NA	NA
Pyrene	4600	--	14000	--	NA	NA	NA
Metals							
Cobalt	--	--	--	--	NA	NA	NA
Lead	2240	--	2240	45000	1590 (17.4)	59600 (76.2)	2130 (145)
Nickel	6200	--	700	1700	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	AST-845-LINE-1	AST-845-LINE-2	AST-845-LINE-3	AST-845-LINE-4	AST-845-LINE-5	MW-1	MW-1				
Field Sample ID	AST-845-LINE-1	AST-845-LINE-2	AST-845-LINE-3	AST-845-LINE-4	AST-845-LINE-5	MW-1(1.5-2)	MW-1(11.5-12)				
Collection Depth (ft bgs)	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	1.5 - 2	11.5 - 12				
Sample Date	3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007	5/29/2003	5/29/2003				
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.097)	ND,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)	ND (0.24)	ND (0.26)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND,D (0.097)	ND,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)	NA	NA
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND,D (0.097)	0.068 J,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)	NA	NA
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.097)	ND,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)	NA	NA
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	ND,D (0.097)	0.077 J,D (0.12)	ND,D (0.1)	0.09 J,D (0.12)	ND,D (0.13)	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)	0.88	ND (0.36)
Benzo(a)anthracene	430	--	3200	--	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	0.49 (0.37)	2.1	ND (0.36)
Benzo(a)pyrene	43	--	7.7	--	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)	1.9	ND (0.36)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.42)	ND (0.41)	ND (0.39)	0.47 (0.4)	0.53 (0.37)	2	ND (0.36)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)	0.71	ND (0.36)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.42)	0.45 (0.41)	ND (0.39)	ND (0.4)	0.49 (0.37)	2.1	ND (0.36)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)	0.39	ND (0.36)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.42)	ND (0.41)	ND (0.39)	ND (0.4)	ND (0.37)	NA	NA
Naphthalene	41	0.54	6	27	ND,D (0.097)	ND,D (0.12)	ND,D (0.1)	ND,D (0.12)	ND,D (0.13)	ND (0.24)	ND (0.26)
Phenanthrene	4600	--	14000	--	ND (0.42)	0.64 (0.41)	ND (0.39)	ND (0.4)	0.66 (0.37)	3.1	ND (0.36)
Pyrene	4600	--	14000	--	ND (0.42)	0.64 (0.41)	0.45 (0.39)	0.62 (0.4)	1 (0.37)	3.2	ND (0.36)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	MW-2	MW-3	MW-3	MW-4	MW-4	PB-252-LINE-1	PB-252-LINE-2				
Field Sample ID	MW-2(0-2)	MW-3(1.5-2)	MW-3(15.5-16)	MW-4(1.5-2)	MW-4(11.5-12)	PB-252-LINE-1	PB-252-LINE-2				
Collection Depth (ft bgs)	0 - 2	1.5 - 2	15.5 - 16	1.5 - 2	11.5 - 12	0 - 0.5	0 - 0.5				
Sample Date	5/29/2003	5/29/2003	5/29/2003	5/29/2003	5/29/2003	5/30/2007	5/30/2007				
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.087 J	ND (0.25)	0.065 J	0.054 J	ND (0.25)	ND,D (0.28)	ND,D (0.21)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	NA	NA	NA	NA	NA	ND,D (0.28)	ND,D (0.21)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	NA	NA	NA	NA	NA	0.15 J,D (0.28)	ND,D (0.21)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	NA	NA	NA	NA	NA	ND,D (0.28)	ND,D (0.21)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.29 J	0.35 J	ND (0.36)	0.33 J	ND (0.41)	NA	NA
Benzo(a)anthracene	430	--	3200	--	0.73	2.7	ND (0.36)	0.93	ND (0.41)	NA	NA
Benzo(a)pyrene	43	--	7.7	--	0.8	5 D	ND (0.36)	1.1	ND (0.41)	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	0.69	3.9	ND (0.36)	0.98	ND (0.41)	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	0.37 J	1.8	ND (0.36)	0.5	ND (0.41)	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.73	2.5	ND (0.36)	0.91	ND (0.41)	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.39)	ND (0.37)	0.6	ND (0.39)	ND (0.41)	ND (0.36)	ND (0.36)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.055 J	ND (0.25)	<u>3.4</u>	0.075 J	ND (0.25)	ND,D (0.28)	0.17 J,D (0.21)
Phenanthrene	4600	--	14000	--	1.1	0.86	1.4	1.2	ND (0.41)	ND (0.36)	0.55 (0.36)
Pyrene	4600	--	14000	--	1.2	1.8	ND (0.36)	1.1	0.26 J	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
 - 6 Italicized concentrations exceed the Construction Worker Direct Contact.
 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-252-LINE-4	PB-252-LINE-5	PB-252-LINE-6	PB-252-PER-1	PB-252-PER-2	PB-252-PER-3	PB-252-PER-4
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-252-LINE-4	PB-252-LINE-5	PB-252-LINE-6	PB-252-PER-1	PB-252-PER-2	PB-252-PER-3	PB-252-PER-4
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	6 - 6.5	6 - 6.5	6 - 6.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	<u>22 D (1.7)</u>	<u>1.6 D (0.15)</u>	<u>0.71 D (0.18)</u>	<u>10 D (1.7)</u>	<u>2.2 D (0.17)</u>	<u>0.72 D (0.19)</u>	<u>1.7 D (0.18)</u>
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	<u>11 D (1.7)</u>	<u>9.9 D (1.5)</u>	<u>14 D (0.18)</u>	<u>7.5 D (1.7)</u>	<u>12 D (0.17)</u>	<u>11 D (0.19)</u>	<u>6.4 D (0.18)</u>
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	<u>73 D (1.7)</u>	<u>63 D (1.5)</u>	6.7 D (0.18)	<u>37 D (1.7)</u>	<u>35 D (1.7)</u>	<u>23 D (1.9)</u>	<u>18 D (1.8)</u>
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	<u>94 D (1.7)</u>	51 D (1.5)	0.45 D (0.18)	7.5 D (1.7)	0.42 D (0.17)	0.59 D (0.19)	0.72 D (0.18)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	1.6 (0.42)	2.6 (0.41)	2.1 (0.41)	ND (0.4)	ND (0.38)	ND (0.42)	ND (0.42)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	<u>49 D (1.7)</u>	<u>43 D (1.5)</u>	<u>7.9 D (0.18)</u>	<u>29 D (1.7)</u>	<u>4.8 D (0.17)</u>	<u>29 D (1.9)</u>	<u>12 D (0.18)</u>
Phenanthrene	4600	--	14000	--	2.5 (0.42)	4.4 (0.41)	4.1 (0.41)	7.9 D (0.79)	0.48 (0.38)	0.23 J (0.42)	3.9 (0.42)
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-252-PER-5	PB-252-PER-6	PB-252-SUB-1	PB-252-SUB-2	PB-252-SUB-3	PB-826-1	PB-826-2
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-252-PER-5	PB-252-PER-6	PB-252-SUB-1	PB-252-SUB-2	PB-252-SUB-3	826-1	826-2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	5 - 5.5	5 - 5.5	5 - 5.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	9/7/2004	9/7/2004
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	<u>2.1 D (0.16)</u>	<u>4.7 D (0.18)</u>	ND,D (0.26)	<u>4.7 D (0.31)</u>	ND,D (0.3)	ND (0.0019)	ND (0.002)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	2.7 D (0.16)	2.3 D (0.18)	ND,D (0.26)	<u>11 D (0.31)</u>	ND,D (0.3)	ND (0.0047)	ND (0.0049)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	6.4 D (0.16)	9.3 D (0.18)	ND,D (0.26)	<u>44 D (3.1)</u>	ND,D (0.3)	ND (0.0019)	0.0025 J (0.002)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.3 D (0.16)	2.7 D (0.18)	ND,D (0.26)	5.2 D (0.31)	ND,D (0.3)	0.0027 J (0.0019)	0.0054 (0.002)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	NA	NA	NA	0.068 (0.0034)	0.23 (0.0035)
Benzo(a)anthracene	430	--	3200	--	NA	NA	NA	NA	NA	0.24 (0.0075)	0.88 (0.031)
Benzo(a)pyrene	43	--	7.7	--	NA	NA	NA	NA	NA	0.25 (0.011)	0.8 (0.046)
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	NA	NA	NA	0.21 (0.015)	0.71 (0.062)
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	NA	NA	NA	0.42 (0.015)	1 (0.015)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	NA	NA	NA	0.23 (0.011)	0.82 (0.012)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	4.2 (0.39)	0.42 (0.39)	ND (0.38)	ND (0.41)	ND (0.43)	0.033 J (0.023)	0.11 J (0.023)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	0.097 (0.019)	0.5 (0.019)
Naphthalene	41	0.54	6	27	<u>26 D (1.6)</u>	<u>3.8 D (0.18)</u>	0.26 J,D (0.26)	<u>24 D (0.31)</u>	ND,D (0.3)	ND (0.0095)	0.016 J (0.0098)
Phenanthrene	4600	--	14000	--	14 D (2)	1 (0.39)	ND (0.38)	ND (0.41)	ND (0.43)	0.39 (0.011)	1.5 (0.012)
Pyrene	4600	--	14000	--	NA	NA	NA	NA	NA	0.78 (0.026)	2.4 (0.027)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-826-3	PB-826-4	PB-826-5	PB-826-6	PB-826-7	PB-826-8	PB-826-9
Field Sample ID	Routine	Routine	Construction	Soil Migration	826-3	826-4	826-5	826-6	826-7	826-8	826-9
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		9/7/2004	9/7/2004	9/7/2004	9/7/2004	9/7/2004	9/7/2004	9/7/2004
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.0019)	ND (0.002)	ND (0.0019)	ND (0.0021)	ND (0.0021)	ND (0.0021)	ND (0.002)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0048)	ND (0.005)	ND (0.0049)	ND (0.0052)	ND (0.0052)	ND (0.0052)	ND (0.005)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	0.0022 J (0.0019)	ND (0.002)	ND (0.0019)	ND (0.0021)	ND (0.0021)	0.0048 J (0.0021)	ND (0.002)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.0043 J (0.0019)	ND (0.002)	0.0027 J (0.0019)	ND (0.0021)	ND (0.0021)	0.0081 (0.0021)	0.0036 J (0.002)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.023 J (0.0034)	0.016 (0.00072)	0.0056 J (0.00069)	0.00085 J (0.0007)	ND (0.00071)	0.023 J (0.0034)	0.025 (0.00068)
Benzo(a)anthracene	430	--	3200	--	0.11 (0.0076)	0.083 (0.0016)	0.027 (0.0015)	0.0056 J (0.0016)	0.0041 J (0.0016)	0.11 (0.0075)	0.048 (0.0015)
Benzo(a)pyrene	43	--	7.7	--	0.16 (0.011)	0.1 (0.0024)	0.032 (0.0023)	0.0085 J (0.0023)	0.0061 J (0.0024)	0.11 (0.011)	0.047 (0.0023)
Benzo(b)fluoranthene	430	--	3200	--	0.13 (0.015)	0.086 (0.0032)	0.027 (0.0031)	0.0069 J (0.0031)	0.0048 J (0.0031)	0.11 (0.015)	0.047 (0.003)
Benzo(g,h,i)perylene	4600	--	14000	--	0.28 (0.015)	0.17 (0.0032)	0.052 (0.0031)	0.013 J (0.0031)	0.011 J (0.0031)	0.17 (0.015)	0.068 (0.003)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.13 (0.011)	0.089 (0.0024)	0.028 (0.0023)	0.0064 J (0.0023)	0.0053 J (0.0024)	0.098 (0.011)	0.074 (0.0023)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.023)	0.012 J (0.0048)	ND (0.0046)	ND (0.0047)	ND (0.0047)	ND (0.023)	0.021 J (0.0045)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.071 J (0.019)	0.046 (0.004)	0.024 (0.0039)	0.004 J (0.0039)	ND (0.0039)	0.06 J (0.019)	0.02 (0.0038)
Naphthalene	41	0.54	6	27	0.015 J (0.0096)	ND (0.01)	ND (0.0097)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.0099)
Phenanthrene	4600	--	14000	--	0.15 (0.011)	0.12 (0.0024)	0.031 (0.0023)	0.0059 J (0.0023)	0.0051 J (0.0024)	0.13 (0.011)	0.18 (0.0023)
Pyrene	4600	--	14000	--	0.44 (0.027)	0.25 (0.0056)	0.076 (0.0054)	0.017 J (0.0055)	0.014 J (0.0055)	0.28 (0.026)	0.17 (0.0053)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-843 LINE 1	PB-843 LINE 2	PB-843 LINE 3	PB-843 LINE 4	PB-843 LINE 5	PB-843 LINE 6	PB-843 LINE 7
Field Sample ID	Routine	Routine	Construction	Soil Migration	843 Line 1	843 Line 2	843 Line 3	843 Line 4	843 Line 5	843 Line 6	843 Line 7
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	0 - 0.5
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.028)	ND (0.028)	ND (0.026)	ND (0.025)	ND (0.027)	ND (0.029)	ND (0.025)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.11 J (0.056)	ND (0.055)	ND (0.052)	ND (0.05)	ND (0.055)	1.4 (0.057)	ND (0.049)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.056)	ND (0.055)	ND (0.052)	ND (0.05)	ND (0.055)	ND (0.057)	ND (0.049)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.056)	ND (0.055)	ND (0.052)	ND (0.05)	ND (0.055)	ND (0.057)	ND (0.049)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.14 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	ND (0.078)	ND (0.037)
Benzo(a)anthracene	430	--	3200	--	0.12 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	0.13 J (0.078)	0.31 (0.037)
Benzo(a)pyrene	43	--	7.7	--	0.067 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	0.1 J (0.078)	0.34 (0.037)
Benzo(b)fluoranthene	430	--	3200	--	0.086 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	0.1 J (0.078)	0.49 (0.037)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	ND (0.078)	0.28 (0.037)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.1 J (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	0.23 J (0.078)	0.41 (0.037)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.39 (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	1 (0.078)	ND (0.037)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	ND (0.078)	0.3 (0.037)
Naphthalene	41	0.54	6	27	ND (0.056)	ND (0.055)	ND (0.052)	ND (0.05)	ND (0.055)	0.067 J (0.057)	ND (0.049)
Phenanthrene	4600	--	14000	--	0.8 (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	2.2 (0.078)	0.14 J (0.037)
Pyrene	4600	--	14000	--	0.31 (0.038)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)	0.37 J (0.078)	0.49 (0.037)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-843 LINE 8	PB-843 LINE 9	PB-843 PERIMETER 1	PB-843 PERIMETER 2	PB-843 PERIMETER 3	PB-843 PERIMETER 4	PB-843 PERIMETER 5
Field Sample ID	Routine	Routine	Construction	Soil Migration	843 Line 8	843 Line 9	843 Perimeter 1	843 Perimeter 2	843 Perimeter 3	843 Perimeter 4	843 Perimeter 5
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.027)	0.035 J (0.026)	ND (0.031)	0.037 J (0.028)	ND (0.026)	ND (0.024)	ND (0.024)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.055)	ND (0.052)	ND (0.063)	ND (0.055)	ND (0.053)	ND (0.049)	ND (0.047)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.055)	ND (0.052)	ND (0.063)	ND (0.055)	ND (0.053)	ND (0.049)	ND (0.047)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.055)	ND (0.052)	ND (0.063)	ND (0.055)	ND (0.053)	ND (0.049)	ND (0.047)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.18)	ND (0.037)	ND (0.04)	0.6 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Benzo(a)anthracene	430	--	3200	--	0.34 J (0.18)	0.087 J (0.037)	ND (0.04)	0.86 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Benzo(a)pyrene	43	--	7.7	--	0.4 J (0.18)	0.065 J (0.037)	ND (0.04)	0.51 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Benzo(b)fluoranthene	430	--	3200	--	0.62 J (0.18)	0.099 J (0.037)	ND (0.04)	0.64 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Benzo(g,h,i)perylene	4600	--	14000	--	0.57 J (0.18)	0.085 J (0.037)	ND (0.04)	0.23 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.47 J (0.18)	0.11 J (0.037)	ND (0.04)	0.77 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.18)	ND (0.037)	ND (0.04)	0.3 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.4 J (0.18)	0.054 J (0.037)	ND (0.04)	0.28 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Naphthalene	41	0.54	6	27	ND (0.055)	ND (0.052)	ND (0.063)	ND (0.055)	ND (0.053)	ND (0.049)	ND (0.047)
Phenanthrene	4600	--	14000	--	0.26 J (0.18)	0.16 J (0.037)	ND (0.04)	2.1 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Pyrene	4600	--	14000	--	0.53 J (0.18)	0.17 J (0.037)	ND (0.04)	1.5 (0.039)	ND (0.038)	ND (0.036)	ND (0.036)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-843 PERIMETER 6	PB-843 SUB 1	PB-843 SUB 2	PB-843 SUB 3	PB-844 LINE 10	PB-844 LINE 1	PB-844 LINE 2
Field Sample ID	Routine	Routine	Construction	Soil Migration	843 Perimeter 6	843 Sub 1	843 Sub 2	843 Sub 3	844 Line 10	844 Line 1	844 Line 2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	5 - 5.5	5 - 5.5	5 - 5.5	5.5 - 6	5.5 - 6	5.5 - 6
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.024)	ND (0.023)	ND (0.024)	ND (0.023)	<u>2.4 (0.096)</u>	ND (0.027)	ND (0.026)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.048)	ND (0.045)	ND (0.048)	ND (0.047)	4.2 (0.19)	ND (0.055)	ND (0.053)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.048)	ND (0.045)	ND (0.048)	ND (0.047)	8.3 (0.19)	ND (0.055)	ND (0.053)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.048)	ND (0.045)	ND (0.048)	ND (0.047)	ND (0.19)	ND (0.055)	ND (0.053)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	4 (0.036)	ND (0.041)	ND (0.037)
Benzo(a)anthracene	430	--	3200	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	0.54 (0.036)	ND (0.041)	ND (0.037)
Benzo(a)pyrene	43	--	7.7	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	0.1 J (0.036)	ND (0.041)	ND (0.037)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	0.066 J (0.036)	ND (0.041)	ND (0.037)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	ND (0.036)	ND (0.041)	ND (0.037)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	0.56 (0.036)	ND (0.041)	ND (0.037)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	2.2 (0.036)	ND (0.041)	ND (0.037)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	0.038 J (0.036)	ND (0.041)	ND (0.037)
Naphthalene	41	0.54	6	27	ND (0.048)	ND (0.045)	ND (0.048)	ND (0.047)	<u>12 (0.19)</u>	ND (0.055)	ND (0.053)
Phenanthrene	4600	--	14000	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	4.1 (0.036)	ND (0.041)	ND (0.037)
Pyrene	4600	--	14000	--	ND (0.038)	ND (0.035)	ND (0.037)	ND (0.037)	0.43 (0.036)	ND (0.041)	ND (0.037)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-844 LINE 3	PB-844 LINE 4	PB-844 LINE 5	PB-844 LINE 6	PB-844 LINE 7	PB-844 LINE 8	PB-844 LINE 9
Field Sample ID	Routine	Routine	Construction	Soil Migration	844 Line 3	844 Line 4	844 Line 5	844 Line 6	844 Line 7	844 Line 8	844 Line 9
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.029)	ND (0.03)	0.034 J (0.029)	ND (0.03)	ND (0.029)	0.067 J (0.027)	0.035 J (0.027)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.057)	ND (0.06)	ND (0.058)	ND (0.061)	ND (0.058)	ND (0.054)	0.34 (0.054)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.057)	ND (0.06)	ND (0.058)	ND (0.061)	ND (0.058)	ND (0.054)	0.22 J (0.054)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.057)	ND (0.06)	ND (0.058)	ND (0.061)	ND (0.058)	ND (0.054)	ND (0.054)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.041)	ND (0.041)	0.078 J (0.041)	ND (0.041)	ND (0.04)	ND (0.04)	ND (0.041)
Benzo(a)anthracene	430	--	3200	--	ND (0.041)	ND (0.041)	0.31 (0.041)	ND (0.041)	0.057 J (0.04)	0.11 J (0.04)	0.17 J (0.041)
Benzo(a)pyrene	43	--	7.7	--	ND (0.041)	ND (0.041)	0.31 (0.041)	ND (0.041)	0.054 J (0.04)	0.11 J (0.04)	0.2 (0.041)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.041)	ND (0.041)	0.32 (0.041)	ND (0.041)	0.054 J (0.04)	0.13 J (0.04)	0.19 J (0.041)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.041)	ND (0.041)	0.17 J (0.041)	ND (0.041)	ND (0.04)	0.082 J (0.04)	0.15 J (0.041)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.041)	ND (0.041)	0.27 (0.041)	ND (0.041)	0.056 J (0.04)	0.12 J (0.04)	0.45 (0.041)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.041)	ND (0.041)	ND (0.041)	ND (0.041)	ND (0.04)	ND (0.04)	0.97 (0.041)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.041)	ND (0.041)	0.16 J (0.041)	ND (0.041)	ND (0.04)	0.073 J (0.04)	0.14 J (0.041)
Naphthalene	41	0.54	6	27	ND (0.057)	ND (0.06)	ND (0.058)	ND (0.061)	ND (0.058)	ND (0.054)	<u>0.95 (0.054)</u>
Phenanthrene	4600	--	14000	--	ND (0.041)	ND (0.041)	0.23 (0.041)	ND (0.041)	0.056 J (0.04)	0.076 J (0.04)	1.9 (0.041)
Pyrene	4600	--	14000	--	ND (0.041)	ND (0.041)	0.29 (0.041)	ND (0.041)	0.069 J (0.04)	0.14 J (0.04)	0.32 (0.041)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-844 PERIMETER 1	PB-844 PERIMETER 2	PB-844 PERIMETER 3	PB-844 PERIMETER 4	PB-844 PERIMETER 5	PB-844 PERIMETER 6	PB-844 SUB 1
Field Sample ID	Routine	Routine	Construction	Soil Migration	844 Perimeter 1	844 Perimeter 2	844 Perimeter 3	844 Perimeter 4	844 Perimeter 5	844 Perimeter 6	844 Sub 1
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	5 - 5.5
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006	8/23/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.026)	ND (0.029)	ND (0.026)	0.38 (0.031)	ND (0.027)	ND (0.027)	0.031 J (0.026)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.052)	ND (0.058)	ND (0.053)	ND (0.061)	0.073 J (0.053)	ND (0.054)	ND (0.052)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.052)	ND (0.058)	ND (0.053)	0.32 (0.061)	ND (0.053)	ND (0.054)	ND (0.052)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.052)	ND (0.058)	ND (0.053)	0.52 (0.061)	ND (0.053)	ND (0.054)	ND (0.052)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.17 J (0.038)	0.25 (0.039)	0.15 J (0.039)	0.92 (0.042)	0.48 (0.039)	0.32 (0.038)	0.14 J (0.04)
Benzo(a)anthracene	430	--	3200	--	0.57 (0.038)	0.64 (0.039)	0.53 (0.039)	2.3 (0.042)	0.11 J (0.039)	0.78 (0.038)	0.21 (0.04)
Benzo(a)pyrene	43	--	7.7	--	0.68 (0.038)	0.51 (0.039)	0.5 (0.039)	1.8 (0.042)	0.068 J (0.039)	0.69 (0.038)	0.14 J (0.04)
Benzo(b)fluoranthene	430	--	3200	--	0.72 (0.038)	0.56 (0.039)	0.53 (0.039)	2.1 (0.042)	0.093 J (0.039)	0.87 (0.038)	0.15 J (0.04)
Benzo(g,h,i)perylene	4600	--	14000	--	0.44 (0.038)	0.32 (0.039)	0.28 (0.039)	1 (0.042)	ND (0.039)	0.42 (0.038)	0.073 J (0.04)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.52 (0.038)	0.6 (0.039)	0.49 (0.039)	1.9 (0.042)	0.12 J (0.039)	0.74 (0.038)	0.2 (0.04)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.075 J (0.038)	0.1 J (0.039)	0.075 J (0.039)	0.42 (0.042)	1.2 (0.039)	0.15 J (0.038)	0.067 J (0.04)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.54 (0.038)	0.35 (0.039)	0.32 (0.039)	1.2 (0.042)	0.048 J (0.039)	0.49 (0.038)	0.087 J (0.04)
Naphthalene	41	0.54	6	27	ND (0.052)	ND (0.058)	ND (0.053)	0.13 J (0.061)	ND (0.053)	ND (0.054)	ND (0.052)
Phenanthrene	4600	--	14000	--	0.55 (0.038)	0.71 (0.039)	0.6 (0.039)	3 (0.042)	3.4 (0.039)	1 (0.038)	0.52 (0.04)
Pyrene	4600	--	14000	--	0.62 (0.038)	0.9 (0.039)	0.66 (0.039)	3 (0.042)	0.38 (0.039)	1.1 (0.038)	0.37 (0.04)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-844 SUB 2	PB-844 SUB 3	PB-845 PERIMETER 1	PB-845 PERIMETER 2	PB-845 PERIMETER 3	PB-845 PERIMETER 4	PB-845 PERIMETER 5
Field Sample ID	Routine	Routine	Construction	Soil Migration	844 Sub 2	844 Sub 3	845 Perimeter 1	845 Perimeter 2	845 Perimeter 3	845 Perimeter 4	845 Perimeter 5
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5 - 5.5	5 - 5.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		8/23/2006	8/23/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.028)	0.095 J (0.027)	ND (0.028)	ND (0.026)	ND (0.029)	ND (0.028)	ND (0.029)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.056)	ND (0.054)	ND (0.057)	ND (0.052)	ND (0.057)	ND (0.056)	0.18 J (0.057)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.056)	ND (0.054)	ND (0.057)	ND (0.052)	ND (0.057)	ND (0.056)	ND (0.057)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.056)	0.078 J (0.054)	ND (0.057)	ND (0.052)	ND (0.057)	ND (0.056)	ND (0.057)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.04)	0.078 J (0.039)	ND (0.04)	1.2 (0.039)	0.43 (0.039)	0.24 (0.038)	ND (0.2)
Benzo(a)anthracene	430	--	3200	--	ND (0.04)	0.11 J (0.039)	ND (0.04)	2.8 (0.039)	1.5 (0.039)	0.75 (0.038)	0.59 J (0.2)
Benzo(a)pyrene	43	--	7.7	--	ND (0.04)	0.089 J (0.039)	0.044 J (0.04)	2.3 (0.039)	1.4 (0.039)	0.68 (0.038)	0.65 J (0.2)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.04)	0.097 J (0.039)	0.05 J (0.04)	2.8 (0.039)	1.6 (0.039)	0.88 (0.038)	1.2 (0.2)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.04)	0.13 J (0.039)	0.056 J (0.04)	1.4 (0.039)	0.84 (0.039)	0.46 (0.038)	0.72 J (0.2)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.04)	0.15 J (0.039)	0.068 J (0.04)	2.8 (0.039)	1.5 (0.039)	0.74 (0.038)	3.1 (0.2)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.04)	ND (0.039)	ND (0.04)	0.51 (0.039)	0.18 J (0.039)	0.13 J (0.038)	0.59 J (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.04)	0.088 J (0.039)	ND (0.04)	1.4 (0.039)	0.81 (0.039)	0.43 (0.038)	0.48 J (0.2)
Naphthalene	41	0.54	6	27	ND (0.056)	ND (0.054)	ND (0.057)	0.12 J (0.052)	ND (0.057)	ND (0.056)	<u>1.2 (0.057)</u>
Phenanthrene	4600	--	14000	--	ND (0.04)	0.18 J (0.039)	ND (0.04)	4.3 (0.078)	2 (0.039)	0.97 (0.038)	1.8 (0.2)
Pyrene	4600	--	14000	--	ND (0.04)	0.17 J (0.039)	0.057 J (0.04)	4.4 (0.078)	2.6 (0.039)	1.3 (0.038)	2 (0.2)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-845 SUB 1	PB-845 SUB 2	PB-845 SUB 3	PB-845-PER-6	PB-846 LINE 1	PB-846 LINE 2	PB-846 LINE 3
Field Sample ID	Routine	Routine	Construction	Soil Migration	845 Sub 1	845 Sub 2	845 Sub 3	PB-845-PER-6	846 Line 1	846 Line 2	846 Line 3
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5 - 5.5	5 - 5.5	5 - 5.5	3 - 3.5	5.5 - 6	5.5 - 6	5.5 - 6
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	8/24/2006	2/12/2008	8/24/2006	8/24/2006	8/24/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.028)	ND (0.029)	ND (0.027)	ND (0.025)	ND (0.026)	ND (0.027)	ND (0.028)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.055)	ND (0.058)	ND (0.054)	ND (0.05)	ND (0.051)	ND (0.054)	ND (0.055)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.055)	ND (0.058)	ND (0.054)	ND (0.05)	ND (0.051)	ND (0.054)	ND (0.055)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.055)	ND (0.058)	ND (0.054)	ND (0.05)	ND (0.051)	ND (0.054)	ND (0.055)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.4 (0.039)	0.11 J (0.04)	0.59 (0.038)	ND (0.036)	0.038 J (0.035)	ND (0.036)	ND (0.039)
Benzo(a)anthracene	430	--	3200	--	1.2 (0.039)	0.11 J (0.04)	0.64 (0.038)	ND (0.036)	0.066 J (0.035)	ND (0.036)	ND (0.039)
Benzo(a)pyrene	43	--	7.7	--	0.86 (0.039)	0.085 J (0.04)	0.44 (0.038)	0.052 J (0.036)	0.05 J (0.035)	ND (0.036)	ND (0.039)
Benzo(b)fluoranthene	430	--	3200	--	1.2 (0.039)	0.12 J (0.04)	0.65 (0.038)	0.064 J (0.036)	0.063 J (0.035)	ND (0.036)	ND (0.039)
Benzo(g,h,i)perylene	4600	--	14000	--	0.48 (0.039)	0.051 J (0.04)	0.25 (0.038)	0.074 J (0.036)	ND (0.035)	ND (0.036)	ND (0.039)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	1.2 (0.039)	0.14 J (0.04)	0.66 (0.038)	0.064 J (0.036)	0.067 J (0.035)	ND (0.036)	ND (0.039)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.19 J (0.039)	0.19 J (0.04)	0.52 (0.038)	ND (0.036)	ND (0.035)	ND (0.036)	ND (0.039)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.53 (0.039)	0.061 J (0.04)	0.27 (0.038)	0.039 J (0.036)	ND (0.035)	ND (0.036)	ND (0.039)
Naphthalene	41	0.54	6	27	0.067 J (0.055)	0.31 (0.058)	0.45 (0.054)	0.074 J (0.05)	0.14 J (0.051)	ND (0.054)	ND (0.055)
Phenanthrene	4600	--	14000	--	1.7 (0.039)	0.62 (0.04)	1.9 (0.038)	ND (0.036)	0.12 J (0.035)	ND (0.036)	ND (0.039)
Pyrene	4600	--	14000	--	2.2 (0.039)	0.28 (0.04)	1.3 (0.038)	0.046 J (0.036)	0.12 J (0.035)	0.045 J (0.036)	ND (0.039)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
 - 6 Italicized concentrations exceed the Construction Worker Direct Contact.
 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-846 LINE 4	PB-846 LINE 5	PB-846 LINE 6	PB-846 LINE 7	PB-846 PERIMETER 1	PB-846 PERIMETER 2	PB-846 PERIMETER 3
Field Sample ID	Routine	Routine	Construction	Soil Migration	846 Line 4	846 Line 5	846 Line 6	846 Line 7	846 Perimeter 1	846 Perimeter 2	846 Perimeter 3
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	3 - 3.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.037 J (0.029)	0.22 J (0.027)	0.12 J (0.026)	0.029 J (0.028)	<u>5 (0.027)</u>	0.039 J (0.026)	ND (0.027)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.16 J (0.059)	0.29 (0.054)	ND (0.052)	ND (0.056)	<u>6.5 (0.053)</u>	ND (0.052)	ND (0.054)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.059)	0.62 (0.054)	ND (0.052)	ND (0.056)	1.8 (0.053)	ND (0.052)	ND (0.054)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.059)	0.12 J (0.054)	0.1 J (0.052)	ND (0.056)	0.28 (0.053)	ND (0.052)	ND (0.054)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.12 J (0.036)	0.16 J (0.039)	0.24 (0.035)	0.22 (0.038)	2 (0.038)	0.086 J (0.039)	1.5 (0.039)
Benzo(a)anthracene	430	--	3200	--	0.1 J (0.036)	0.38 (0.039)	0.37 (0.035)	0.58 (0.038)	3.4 (0.038)	0.17 J (0.039)	3.9 (0.039)
Benzo(a)pyrene	43	--	7.7	--	0.038 J (0.036)	0.32 (0.039)	0.2 (0.035)	0.49 (0.038)	2.6 (0.038)	0.16 J (0.039)	3.3 (0.039)
Benzo(b)fluoranthene	430	--	3200	--	0.061 J (0.036)	0.43 (0.039)	0.3 (0.035)	0.65 (0.038)	3.1 (0.038)	0.26 (0.039)	4.4 (0.039)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.036)	0.21 (0.039)	0.12 J (0.035)	0.34 (0.038)	1.4 (0.038)	0.2 (0.039)	1.8 (0.039)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.29 (0.036)	0.51 (0.039)	0.85 (0.035)	0.55 (0.038)	4 (0.038)	0.28 (0.039)	3.6 (0.039)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.73 (0.036)	0.38 (0.039)	0.55 (0.035)	0.14 J (0.038)	4.2 (0.038)	0.09 J (0.039)	0.57 (0.039)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.036)	0.2 (0.039)	0.096 J (0.035)	0.33 (0.038)	1.4 (0.038)	0.13 J (0.039)	1.9 (0.039)
Naphthalene	41	0.54	6	27	0.14 J (0.059)	<u>0.76 (0.054)</u>	0.062 J (0.052)	0.1 J (0.056)	<u>2.3 (0.053)</u>	0.095 J (0.052)	0.16 J (0.054)
Phenanthrene	4600	--	14000	--	1.9 (0.036)	1.6 (0.039)	1.4 (0.035)	0.73 (0.038)	9.3 (0.19)	0.3 (0.039)	4.9 (0.19)
Pyrene	4600	--	14000	--	0.3 (0.036)	0.68 (0.039)	0.88 (0.035)	1 (0.038)	4.1 (0.038)	0.35 (0.039)	6.3 (0.19)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-846 PERIMETER 4	PB-846 PERIMETER 5	PB-846 PERIMETER 6	PB-846 SUB 1	PB-846 SUB 2	PB-846 SUB 3	PB-847-1
Field Sample ID	Routine	Routine	Construction	Soil Migration	846 Perimeter 4	846 Perimeter 5	846 Perimeter 6	846 Sub 1	846 Sub 2	846 Sub 3	AST-847-1/0-0.5
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	3 - 3.5	3 - 3.5	3 - 3.5	5 - 5.5	5 - 5.5	5 - 5.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	10/16/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.028)	ND (0.026)	0.12 J (0.026)	ND (0.025)	ND (0.025)	0.027 J (0.026)	ND (0.028)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.057)	ND (0.052)	0.063 J (0.052)	ND (0.049)	ND (0.05)	ND (0.053)	ND (0.056)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.057)	ND (0.052)	0.063 J (0.052)	ND (0.049)	ND (0.05)	ND (0.053)	ND (0.056)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.057)	ND (0.052)	ND (0.052)	ND (0.049)	ND (0.05)	ND (0.053)	ND (0.056)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	ND (0.056)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.19 J (0.039)	ND (0.039)	2 (0.039)	ND (0.038)	ND (0.036)	1.6 (0.04)	ND (0.036)
Benzo(a)anthracene	430	--	3200	--	1.3 (0.039)	ND (0.039)	3.5 (0.039)	ND (0.038)	ND (0.036)	3.8 (0.04)	ND (0.036)
Benzo(a)pyrene	43	--	7.7	--	1.4 (0.039)	ND (0.039)	2.4 (0.039)	ND (0.038)	ND (0.036)	2.9 (0.04)	ND (0.036)
Benzo(b)fluoranthene	430	--	3200	--	1.8 (0.039)	ND (0.039)	3.2 (0.039)	ND (0.038)	ND (0.036)	3.6 (0.04)	0.046 J (0.036)
Benzo(g,h,i)perylene	4600	--	14000	--	0.63 (0.039)	ND (0.039)	1.4 (0.039)	ND (0.038)	ND (0.036)	2 (0.04)	ND (0.036)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	1.1 (0.039)	ND (0.039)	3.4 (0.039)	ND (0.038)	ND (0.036)	3.7 (0.04)	0.079 J (0.036)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.11 J (0.039)	ND (0.039)	1.7 (0.039)	ND (0.038)	ND (0.036)	1.1 (0.04)	ND (0.036)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.73 (0.039)	ND (0.039)	1.4 (0.039)	ND (0.038)	ND (0.036)	1.8 (0.04)	ND (0.036)
Naphthalene	41	0.54	6	27	ND (0.057)	ND (0.052)	<u>1.1 (0.052)</u>	ND (0.049)	ND (0.05)	0.16 J (0.053)	ND (0.056)
Phenanthrene	4600	--	14000	--	0.69 (0.039)	ND (0.039)	9.1 (0.2)	ND (0.038)	ND (0.036)	6.2 (0.12)	0.043 J (0.036)
Pyrene	4600	--	14000	--	1.1 (0.039)	ND (0.039)	7.2 (0.2)	ND (0.038)	ND (0.036)	6.4 (0.12)	0.05 J (0.036)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	268 (0.464)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-847-2	PB-847-3	PB-847-4	PB-847-5	PB-847-6	PB-848 LINE 1	PB-848 LINE 2
Field Sample ID	Routine	Routine	Construction	Soil Migration	AST-847-2/0-0.5	AST-847-3/0-0.5	AST-847-4/0-0.5	AST-847-5/0-0.5	AST-847-6/0-0.5	848 Line 1	848 Line 2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		10/16/2006	10/16/2006	10/16/2006	10/16/2006	10/16/2006	8/24/2006	8/24/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.028)	ND (0.027)	ND (0.028)	ND (0.028)	ND (0.028)	ND (0.025)	ND (0.028)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)	ND (0.056)	ND (0.05)	ND (0.055)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)	ND (0.056)	ND (0.05)	ND (0.055)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)	ND (0.056)	ND (0.05)	ND (0.055)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)	ND (0.056)	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.061 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)	ND (0.039)	ND (0.18)	ND (0.037)
Benzo(a)anthracene	430	--	3200	--	0.17 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)	ND (0.039)	ND (0.18)	0.075 J (0.037)
Benzo(a)pyrene	43	--	7.7	--	0.18 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)	ND (0.039)	0.23 J (0.18)	0.058 J (0.037)
Benzo(b)fluoranthene	430	--	3200	--	0.16 J (0.038)	ND (0.038)	ND (0.039)	0.043 J (0.038)	ND (0.039)	ND (0.18)	0.067 J (0.037)
Benzo(g,h,i)perylene	4600	--	14000	--	0.091 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)	ND (0.039)	ND (0.18)	0.059 J (0.037)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.13 J (0.038)	ND (0.038)	ND (0.039)	0.048 J (0.038)	ND (0.039)	0.36 J (0.18)	0.083 J (0.037)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.038)	ND (0.038)	ND (0.039)	ND (0.038)	ND (0.039)	ND (0.18)	ND (0.037)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.091 J (0.038)	ND (0.038)	ND (0.039)	ND (0.038)	ND (0.039)	ND (0.18)	0.044 J (0.037)
Naphthalene	41	0.54	6	27	ND (0.057)	ND (0.054)	ND (0.057)	ND (0.055)	0.063 J (0.056)	ND (0.05)	ND (0.055)
Phenanthrene	4600	--	14000	--	0.3 (0.038)	ND (0.038)	ND (0.039)	0.081 J (0.038)	ND (0.039)	ND (0.18)	0.048 J (0.037)
Pyrene	4600	--	14000	--	0.31 (0.038)	ND (0.038)	ND (0.039)	0.085 J (0.038)	ND (0.039)	ND (0.18)	0.1 J (0.037)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	185 (0.493)	177 (0.497)	35.1 (0.516)	154 (0.492)	15.8 (0.505)	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-848 LINE 3	PB-848 LINE 6	PB-848 LINE 7	PB-848 PERIMETER 1	PB-848 PERIMETER 2	PB-848 PERIMETER 3	PB-848 PERIMETER 6
Field Sample ID	Routine	Routine	Construction	Soil Migration	848 Line 3	848 Line 6	848 Line 7	848 Perimeter 1	848 Perimeter 2	848 Perimeter 3	848 Perimeter 6
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	5.5 - 6	5.5 - 6	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006	8/24/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.027)	ND (0.028)	0.1 J (0.028)	ND (0.028)	ND (0.027)	ND (0.027)	ND (0.028)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.054)	0.81 (0.055)	4.6 (0.055)	ND (0.055)	ND (0.053)	0.15 J (0.053)	ND (0.057)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.054)	ND (0.055)	0.26 J (0.055)	ND (0.055)	ND (0.053)	ND (0.053)	ND (0.057)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.054)	ND (0.055)	ND (0.055)	ND (0.055)	ND (0.053)	ND (0.053)	ND (0.057)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.039)	0.11 J (0.041)	0.35 (0.041)	ND (0.04)	ND (0.04)	0.06 J (0.039)	ND (0.039)
Benzo(a)anthracene	430	--	3200	--	ND (0.039)	0.071 J (0.041)	0.16 J (0.041)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)
Benzo(a)pyrene	43	--	7.7	--	ND (0.039)	ND (0.041)	0.14 J (0.041)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.039)	ND (0.041)	0.12 J (0.041)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.039)	ND (0.041)	0.067 J (0.041)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.039)	0.16 J (0.041)	0.53 (0.041)	ND (0.04)	ND (0.04)	0.15 J (0.039)	ND (0.039)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.039)	0.51 (0.041)	1.3 (0.041)	ND (0.04)	ND (0.04)	0.59 (0.039)	ND (0.039)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.039)	ND (0.041)	0.059 J (0.041)	ND (0.04)	ND (0.04)	ND (0.039)	ND (0.039)
Naphthalene	41	0.54	6	27	0.071 J (0.054)	ND (0.055)	ND (0.055)	ND (0.055)	ND (0.053)	0.059 J (0.053)	ND (0.057)
Phenanthrene	4600	--	14000	--	ND (0.039)	0.87 (0.041)	3.1 (0.041)	ND (0.04)	ND (0.04)	0.88 (0.039)	ND (0.039)
Pyrene	4600	--	14000	--	0.042 J (0.039)	0.15 J (0.041)	0.44 (0.041)	ND (0.04)	ND (0.04)	0.12 J (0.039)	ND (0.039)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-848 SUB 1	PB-848 SUB 2	PB-848 SUB 3	PB848-18-1-1	PB848-18-1-2	PB848-18-1-4	PB848-18-2-11
Field Sample ID	Routine	Routine	Construction	Soil Migration	848 Sub 1	848 Sub 2	848 Sub 3	PB848-001G (1-1)	PB848-002G (1-2)	PB848-003G (1-4)	PB848-006G (2-11)
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5 - 5.5	5 - 5.5	5 - 5.5	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1
Sample Date	Direct Contact		Direct Contact		8/24/2006	8/24/2006	8/24/2006	5/7/2018	5/7/2018	5/7/2018	5/8/2018
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.03)	ND (0.027)	<u>20 (0.28)</u>	0.018 (0.004)	0.03 (0.005)	0.042 (0.005)	0.003 J (0.005)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.059)	ND (0.055)	<u>8.9 (0.056)</u>	ND (0.004)	ND (0.005)	ND (0.005)	ND (0.005)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.059)	ND (0.055)	<u>46 (0.56)</u>	ND (0.004)	0.0009 J (0.005)	0.001 J (0.005)	ND (0.005)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	ND (0.004)	ND (0.005)	ND (0.005)	ND (0.005)
Toluene	8000	76	650	9800	ND (0.059)	ND (0.055)	1.5 (0.056)	0.009 (0.004)	0.011 (0.005)	0.018 (0.005)	0.005 J (0.005)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	ND (0.004)	ND (0.005)	0.001 J (0.005)	ND (0.005)
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	ND (0.004)	ND (0.005)	ND (0.005)	ND (0.005)
Xylenes (total)	240	1.5	51	340	NA	NA	NA	0.003 J (0.004)	0.005 (0.005)	0.007 (0.005)	0.002 J (0.005)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.04)	ND (0.041)	0.21 (0.039)	NA	NA	NA	NA
Benzo(a)anthracene	430	--	3200	--	ND (0.04)	ND (0.041)	ND (0.039)	NA	NA	NA	NA
Benzo(a)pyrene	43	--	7.7	--	ND (0.04)	ND (0.041)	ND (0.039)	NA	NA	NA	NA
Benzo(b)fluoranthene	430	--	3200	--	ND (0.04)	ND (0.041)	ND (0.039)	NA	NA	NA	NA
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.04)	ND (0.041)	ND (0.039)	NA	NA	NA	NA
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.04)	ND (0.041)	ND (0.039)	NA	NA	NA	NA
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.04)	ND (0.041)	2.2 (0.039)	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.04)	ND (0.041)	ND (0.039)	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.059)	ND (0.055)	<u>4.9 (0.056)</u>	NA	NA	NA	NA
Phenanthrene	4600	--	14000	--	ND (0.04)	ND (0.041)	1.9 (0.039)	NA	NA	NA	NA
Pyrene	4600	--	14000	--	ND (0.04)	ND (0.041)	ND (0.039)	NA	NA	NA	NA
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
 - 6 Italicized concentrations exceed the Construction Worker Direct Contact.
 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB848-18-2-2	PB848-18-2-5	PB-848-LINE-10	PB-848-LINE-11	PB-848-LINE-12	PB-848-LINE-13	PB-848-LINE-4
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB848-004G (2-2)	PB848-005G (2-5)	PB-848-LINE-10	PB-848-LINE-11	PB-848-LINE-12	PB-848-LINE-13	PB-848-LINE-4
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0.5 - 1	0.5 - 1	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6	5.5 - 6
Sample Date	Direct Contact		Direct Contact		5/8/2018	5/8/2018	5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.001 J (0.005)	0.0009 J (0.006)	ND,D (0.15)	ND,D (0.16)	ND,D (0.33)	0.13 J,D (0.21)	ND,D (0.19)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.005)	ND (0.006)	2.5 D (0.15)	ND,D (0.16)	0.41 D (0.33)	ND,D (0.21)	<u>8.5 D (0.19)</u>
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.005)	ND (0.006)	0.69 D (0.15)	0.084 J,D (0.16)	0.24 J,D (0.33)	0.16 J,D (0.21)	ND,D (0.19)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.005)	ND (0.006)	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.005)	ND (0.006)	ND,D (0.15)	0.1 J,D (0.16)	ND,D (0.33)	ND,D (0.21)	ND,D (0.19)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.005)	ND (0.006)	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.005)	ND (0.006)	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	ND (0.005)	ND (0.006)	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	NA	NA	ND (0.43)	ND (0.4)	ND (0.42)	ND (0.39)	ND (0.43)
Benzo(a)anthracene	430	--	3200	--	NA	NA	ND (0.43)	ND (0.4)	ND (0.42)	ND (0.39)	ND (0.43)
Benzo(a)pyrene	43	--	7.7	--	NA	NA	ND (0.43)	ND (0.4)	ND (0.42)	ND (0.39)	ND (0.43)
Benzo(b)fluoranthene	430	--	3200	--	NA	NA	ND (0.43)	ND (0.4)	ND (0.42)	ND (0.39)	ND (0.43)
Benzo(g,h,i)perylene	4600	--	14000	--	NA	NA	ND (0.43)	ND (0.4)	ND (0.42)	ND (0.39)	ND (0.43)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	NA	NA	ND (0.43)	ND (0.4)	ND (0.42)	ND (0.39)	ND (0.43)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	NA	NA	0.66 (0.43)	0.38 J (0.4)	ND (0.42)	ND (0.39)	0.75 (0.43)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	ND (0.43)	ND (0.4)	ND (0.42)	ND (0.39)	ND (0.43)
Naphthalene	41	0.54	6	27	NA	NA	0.28 D (0.15)	0.3 D (0.16)	<u>1.9 D (0.33)</u>	ND,D (0.21)	ND,D (0.19)
Phenanthrene	4600	--	14000	--	NA	NA	1.5 (0.43)	ND (0.4)	ND (0.42)	ND (0.39)	1.7 (0.43)
Pyrene	4600	--	14000	--	NA	NA	ND (0.43)	ND (0.4)	ND (0.42)	ND (0.39)	ND (0.43)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-848-LINE-5	PB-848-LINE-8	PB-848-LINE-9	PB-848-PER-4	PB-848-PER-5	PB-849-LINE-1	PB-849-LINE-2
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-848-LINE-5	PB-848-LINE-8	PB-848-LINE-9	PB-848-PER-4	PB-848-PER-5	PB-849-LINE-1	PB-849-LINE-2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5.5 - 6	5.5 - 6	5.5 - 6	3 - 3.5	3 - 3.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		5/30/2007	5/30/2007	5/30/2007	5/30/2007	5/30/2007	9/4/2007	9/4/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.3)	ND,D (0.27)	ND,D (0.18)	<u>0.93 D (0.18)</u>	ND,D (0.18)	ND (0.0056)	ND (0.0061)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	0.94 D (0.3)	<u>8.6 D (0.27)</u>	0.9 D (0.18)	0.63 D (0.18)	ND,D (0.18)	ND (0.0056)	ND (0.0061)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND,D (0.3)	1.7 D (0.27)	0.2 D (0.18)	0.27 D (0.18)	ND,D (0.18)	ND (0.0056)	ND (0.0061)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.3)	ND,D (0.27)	0.14 J,D (0.18)	ND,D (0.18)	ND,D (0.18)	ND (0.0056)	ND (0.0061)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Benzo(a)anthracene	430	--	3200	--	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Benzo(a)pyrene	43	--	7.7	--	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.43)	0.83 (0.41)	0.48 (0.42)	10 D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Naphthalene	41	0.54	6	27	ND,D (0.3)	0.33 D (0.27)	<u>0.9 D (0.18)</u>	ND,D (0.18)	ND,D (0.18)	0.0039 J (0.0056)	0.002 J (0.0061)
Phenanthrene	4600	--	14000	--	ND (0.43)	1.5 (0.41)	0.79 (0.42)	13 D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Pyrene	4600	--	14000	--	ND (0.43)	ND (0.41)	ND (0.42)	ND,D (2.3)	ND (0.37)	ND,D (3.7)	ND (0.4)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-849-LINE-3	PB-849-LINE-4	PB-849-PER1	PB-849-PER2	PB-849-PER3	PB-849-PER4	PB-849-PER5
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-849-LINE-3	PB-849-LINE-4	PB-849-PER1	PB-849-PER2	PB-849-PER3	PB-849-PER4	PB-849-PER5
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5	3 - 3.5
Sample Date	Direct Contact		Direct Contact		9/4/2007	9/4/2007	5/25/2007	5/25/2007	5/25/2007	5/25/2007	5/25/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	0.0046 J (0.0061)	ND (0.0058)	ND,D (0.18)	ND,D (0.16)	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0061)	ND (0.0058)	ND,D (0.18)	ND,D (0.16)	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.0061)	ND (0.0058)	ND,D (0.18)	ND,D (0.16)	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.0047 J (0.0061)	ND (0.0058)	ND,D (0.18)	ND,D (0.16)	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Benzo(a)anthracene	430	--	3200	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Benzo(a)pyrene	43	--	7.7	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Naphthalene	41	0.54	6	27	0.0036 J (0.0061)	0.002 J (0.0058)	ND,D (0.18)	ND,D (0.16)	ND,D (0.29)	ND,D (0.16)	ND,D (0.15)
Phenanthrene	4600	--	14000	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Pyrene	4600	--	14000	--	ND (0.41)	ND (0.38)	ND (0.4)	ND (0.4)	ND (0.4)	ND (0.37)	ND (0.4)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
 - 6 Italicized concentrations exceed the Construction Worker Direct Contact.
 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-849-SUB1	PB-880-10	PB-880-11	PB-880-1	PB-880-12	PB-880-13	PB-880-14
Field Sample ID	Routine	Routine	Construction	Soil Migration	PB-849-SUB1	880-10	880-11	880-1	880-12	880-13	880-14
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	5 - 5.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		5/25/2007	4/24/2004	4/24/2004	4/8/2004	4/24/2004	4/24/2004	9/7/2004
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.31)	0.33 (0.028)	<u>1.1 (0.029)</u>	0.42 (0.01)	0.034 J (0.028)	<u>8 (0.029)</u>	0.014 (0.0021)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND,D (0.31)	0.3 (0.056)	2.7 (0.057)	0.35 (0.02)	0.069 J (0.056)	1.6 (0.057)	0.031 (0.0054)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND,D (0.31)	0.72 (0.056)	6.3 (0.057)	1 (0.02)	0.15 J (0.056)	3.3 (0.057)	ND (0.024)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.31)	1.7 (0.056)	12 (0.057)	2.7 (0.02)	0.26 J (0.056)	24 (0.23)	0.037 (0.0021)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.42)	ND (1)	ND (2)	ND (0.19)	ND (2)	ND (2)	0.021 J (0.0036)
Benzo(a)anthracene	430	--	3200	--	ND (0.42)	ND (1)	ND (2)	ND (0.19)	ND (2)	ND (2)	0.063 (0.0081)
Benzo(a)pyrene	43	--	7.7	--	ND (0.42)	ND (1)	ND (2)	ND (0.19)	ND (2)	ND (2)	0.099 (0.012)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.42)	ND (1)	ND (2)	ND (0.19)	ND (2)	ND (2)	0.085 (0.016)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.42)	ND (1)	ND (2)	ND (0.19)	ND (2)	ND (2)	0.1 (0.016)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.42)	ND (1)	ND (2)	ND (0.19)	ND (2)	ND (2)	0.085 (0.012)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.42)	1.4 J (1)	2.8 J (2)	0.46 J (0.19)	ND (2)	ND (2)	0.026 J (0.024)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.42)	ND (1)	ND (2)	ND (0.19)	ND (2)	ND (2)	ND (0.02)
Naphthalene	41	0.54	6	27	ND,D (0.31)	<u>1.3 (0.056)</u>	<u>13 (0.057)</u>	<u>2 (0.02)</u>	0.41 (0.056)	<u>10 (0.057)</u>	0.22 (0.011)
Phenanthrene	4600	--	14000	--	ND (0.42)	3.3 J (1)	5.9 J (2)	0.86 J (0.19)	ND (2)	2 J (2)	0.16 (0.012)
Pyrene	4600	--	14000	--	ND (0.42)	ND (1)	ND (2)	0.2 J (0.19)	ND (2)	ND (2)	0.19 (0.028)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-880-2	PB-880-3	PB-880-4	PB-880-5	PB-880-6	PB-880-7	PB-880-8
Field Sample ID	Routine	Routine	Construction	Soil Migration	880-2	880-3	880-4	880-5	880-6	880-7	880-8
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		4/8/2004	4/8/2004	4/8/2004	4/8/2004	4/8/2004	4/8/2004	4/8/2004
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.012)	ND (0.013)	0.14 (0.013)	0.22 (0.013)	ND (0.012)	0.018 J (0.012)	<u>0.58 (0.015)</u>
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.023)	ND (0.027)	0.27 (0.025)	0.49 (0.027)	ND (0.025)	ND (0.024)	0.39 (0.03)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.023)	ND (0.027)	0.66 (0.025)	1.3 (0.027)	ND (0.025)	ND (0.024)	1.2 (0.03)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.023)	ND (0.027)	1.3 (0.025)	2.4 (0.027)	0.034 J (0.025)	0.03 J (0.024)	3.2 (0.03)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.039)	ND (0.41)	ND (0.2)	0.22 J (0.04)	ND (0.04)	ND (0.39)	0.74 J (0.44)
Benzo(a)anthracene	430	--	3200	--	ND (0.039)	ND (0.41)	ND (0.2)	0.16 J (0.04)	ND (0.04)	ND (0.39)	0.52 J (0.44)
Benzo(a)pyrene	43	--	7.7	--	ND (0.039)	ND (0.41)	ND (0.2)	0.17 J (0.04)	ND (0.04)	ND (0.39)	0.59 J (0.44)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.039)	ND (0.41)	ND (0.2)	0.2 J (0.04)	ND (0.04)	ND (0.39)	0.68 J (0.44)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.039)	ND (0.41)	ND (0.2)	0.1 J (0.04)	ND (0.04)	ND (0.39)	ND (0.44)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.039)	ND (0.41)	ND (0.2)	0.2 J (0.04)	ND (0.04)	ND (0.39)	1 J (0.44)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.039)	ND (0.41)	0.34 J (0.2)	0.57 (0.04)	ND (0.04)	ND (0.39)	1.9 J (0.44)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.039)	ND (0.41)	ND (0.2)	0.1 J (0.04)	ND (0.04)	ND (0.39)	ND (0.44)
Naphthalene	41	0.54	6	27	ND (0.023)	ND (0.027)	<u>1.1 (0.025)</u>	<u>2.1 (0.027)</u>	ND (0.025)	0.038 J (0.024)	<u>1.4 (0.03)</u>
Phenanthrene	4600	--	14000	--	ND (0.039)	ND (0.41)	0.59 J (0.2)	1.2 (0.04)	ND (0.04)	ND (0.39)	4.1 J (0.44)
Pyrene	4600	--	14000	--	ND (0.039)	ND (0.41)	ND (0.2)	0.36 J (0.04)	ND (0.04)	ND (0.39)	1.3 J (0.44)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-880-9	PB-880-SURFACE	PB-881-1_2004	PB-881-1_2005	PB-881-2_2004	PB-881-2_2005	PB-881-3_2004
Field Sample ID	Routine	Routine	Construction	Soil Migration	880-9	880-Surface	881-1_07/22/2004	881-1_10/26/2005	881-2_07/22/2004	881-2_10/26/2005	881-3_07/22/2004
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		4/24/2004	4/8/2004	7/22/2004	10/26/2005	7/22/2004	10/26/2005	7/22/2004
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	<u>3.1 (0.026)</u>	<u>36 (0.26)</u>	ND (0.0012)	ND (0.023)	0.011 (0.001)	ND (0.028)	ND (0.02)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	4.6 (0.051)	<u>13 (0.52)</u>	ND (0.0031)	ND (0.045)	0.084 (0.0026)	ND (0.056)	0.85 (0.049)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	13 (0.051)	<u>41 (0.52)</u>	ND (0.0012)	ND (0.045)	0.023 (0.001)	ND (0.056)	0.3 (0.02)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	29 (0.26)	<u>140 (0.52)</u>	0.0024 J (0.0012)	ND (0.045)	0.032 (0.001)	ND (0.056)	0.25 (0.02)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (2)	3.6 J (0.36)	0.019 (0.000011)	ND (0.037)	0.057 (0.0036)	ND (0.039)	0.17 J (0.033)
Benzo(a)anthracene	430	--	3200	--	ND (2)	ND (0.36)	0.077 (0.0016)	0.2 (0.037)	0.018 J (0.0079)	0.046 J (0.039)	ND (0.073)
Benzo(a)pyrene	43	--	7.7	--	ND (2)	ND (0.36)	0.091 (0.0024)	ND (0.037)	0.021 J (0.012)	0.06 J (0.039)	ND (0.11)
Benzo(b)fluoranthene	430	--	3200	--	ND (2)	0.88 J (0.36)	0.067 (0.0031)	ND (0.037)	0.019 J (0.016)	0.042 J (0.039)	ND (0.15)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (2)	ND (0.36)	0.12 (0.0031)	ND (0.037)	ND (0.016)	0.065 J (0.039)	ND (0.15)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (2)	2.1 J (0.36)	0.075 (0.0024)	0.15 J (0.037)	0.065 J (0.012)	0.14 J (0.039)	ND (0.74)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (2)	12 (0.36)	0.0057 J (0.0047)	0.069 J (0.037)	0.069 J (0.024)	ND (0.039)	0.24 J (0.22)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (2)	ND (0.36)	0.043 (0.0039)	ND (0.037)	ND (0.02)	ND (0.039)	ND (0.18)
Naphthalene	41	0.54	6	27	<u>22 (0.26)</u>	<u>52 (0.52)</u>	ND (0.0061)	ND (0.045)	ND (1.2)	ND (0.056)	<u>3.4 (0.098)</u>
Phenanthrene	4600	--	14000	--	4.1 J (2)	28 (0.36)	0.096 (0.000035)	0.13 J (0.037)	0.25 (0.012)	0.058 J (0.039)	0.61 J (0.11)
Pyrene	4600	--	14000	--	ND (2)	3.1 J (0.36)	0.21 (0.0055)	0.11 J (0.037)	0.12 J (0.028)	0.1 J (0.039)	0.39 J (0.26)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
 - 6 Italicized concentrations exceed the Construction Worker Direct Contact.
 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-881-3_2005	PB-881-4_2004	PB-881-4_2005	PB-881-5_2004	PB-881-5_2005	PB-881-6_2004	PB-881-6_2005
Field Sample ID	Routine	Routine	Construction	Soil Migration	881-3_10/26/2005	881-4_07/22/2004	881-4_10/26/2005	881-5_07/22/2004	881-5_10/26/2005	881-6_07/22/2004	881-6_10/26/2005
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		10/26/2005	7/22/2004	10/26/2005	7/22/2004	10/26/2005	7/22/2004	10/26/2005
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.025)	ND (0.0011)	ND (0.027)	ND (0.18)	ND (0.027)	ND (0.32)	ND (0.024)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.051)	ND (0.0028)	ND (0.053)	5.8 (0.45)	ND (0.054)	ND (0.81)	ND (0.047)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.051)	ND (0.0011)	ND (0.053)	ND (0.18)	ND (0.054)	ND (0.32)	ND (0.047)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.051)	0.0027 J (0.0011)	ND (0.053)	1.7 (0.18)	ND (0.054)	ND (0.32)	ND (0.047)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	NA	NA	NA	NA	NA	NA
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.039)	ND (0.035)	ND (0.041)	0.89 (0.065)	ND (0.041)	0.36 J (0.064)	ND (0.039)
Benzo(a)anthracene	430	--	3200	--	ND (0.039)	0.078 J (0.077)	0.058 J (0.041)	ND (0.14)	ND (0.041)	ND (0.14)	0.044 J (0.039)
Benzo(a)pyrene	43	--	7.7	--	ND (0.039)	ND (0.12)	0.049 J (0.041)	ND (0.22)	0.05 J (0.041)	ND (0.21)	0.058 J (0.039)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.039)	ND (0.15)	0.047 J (0.041)	ND (0.29)	0.061 J (0.041)	ND (0.29)	0.057 J (0.039)
Benzo(g,h,i)perylene	4600	--	14000	--	0.057 J (0.039)	ND (0.15)	ND (0.041)	ND (0.29)	0.053 J (0.041)	ND (0.29)	0.078 J (0.039)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.039)	ND (0.12)	0.087 J (0.041)	ND (0.22)	0.051 J (0.041)	ND (0.21)	0.064 J (0.039)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.039)	ND (0.23)	ND (0.041)	1.8 J (0.43)	ND (0.041)	ND (0.43)	ND (0.039)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.052 J (0.039)	ND (0.19)	ND (0.041)	ND (0.36)	ND (0.041)	ND (0.36)	0.042 J (0.039)
Naphthalene	41	0.54	6	27	ND (0.051)	0.013 (0.0055)	ND (0.053)	<u>31 (0.91)</u>	ND (0.054)	<u>20 (1.6)</u>	ND (0.047)
Phenanthrene	4600	--	14000	--	ND (0.039)	ND (0.12)	0.059 J (0.041)	4.2 (0.22)	ND (0.041)	0.66 J (0.21)	ND (0.039)
Pyrene	4600	--	14000	--	0.054 J (0.039)	ND (0.27)	0.098 J (0.041)	1.6 J (0.5)	0.081 J (0.041)	0.92 J (0.5)	0.082 J (0.039)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-881-7_2004	PB-884-SS-1	PB-884-SS-2	PB-885-CS-10	PB-885-CS-11	PB-885-CS-1	PB-885-CS-12
Field Sample ID	Routine	Routine	Construction	Soil Migration	881-7_07/22/2004	AST-884-SS-1	AST-884-SS-2	AST-885-CS-10	AST-885-CS-11	AST-885-CS-1	AST-885-CS-12
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		7/22/2004	11/30/2006	11/30/2006	3/14/2007	3/14/2007	3/14/2007	3/14/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.2)	ND (0.031)	0.055 J (0.029)	ND,D (0.09)	ND,D (0.095)	ND,D (0.096)	ND,D (0.094)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	2.9 (0.5)	0.49 (0.063)	ND (0.059)	0.099 D (0.09)	0.089 J,D (0.095)	0.054 J,D (0.096)	ND,D (0.094)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.5)	0.74 (0.063)	ND (0.059)	ND,D (0.09)	ND,D (0.095)	0.11 D (0.096)	ND,D (0.094)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.33 J (0.2)	0.12 J (0.063)	ND (0.059)	ND,D (0.09)	ND,D (0.095)	ND,D (0.096)	ND,D (0.094)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	NA	<u>6.4 (0.063)</u>	ND (0.059)	0.15 D (0.09)	ND,D (0.095)	<u>2.1 D (0.096)</u>	ND,D (0.094)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	0.24 J (0.031)	0.045 J (0.043)	ND (0.04)	ND (0.4)	ND (0.41)	ND (0.39)	ND (0.38)
Benzo(a)anthracene	430	--	3200	--	ND (0.069)	0.073 J (0.043)	0.14 J (0.04)	ND (0.4)	ND (0.41)	ND (0.39)	ND (0.38)
Benzo(a)pyrene	43	--	7.7	--	ND (0.1)	0.081 J (0.043)	0.14 J (0.04)	ND (0.4)	ND (0.41)	ND (0.39)	ND (0.38)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.14)	0.088 J (0.043)	0.15 J (0.04)	ND (0.4)	ND (0.41)	ND (0.39)	ND (0.38)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	0.058 J (0.043)	0.096 J (0.04)	ND (0.4)	ND (0.41)	ND (0.39)	ND (0.38)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.1)	0.1 J (0.043)	0.15 J (0.04)	ND (0.4)	ND (0.41)	ND (0.39)	ND (0.38)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	0.49 J (0.21)	0.39 (0.043)	ND (0.04)	ND (0.4)	ND (0.41)	ND (0.39)	ND (0.38)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.17)	0.047 J (0.043)	0.1 J (0.04)	ND (0.4)	ND (0.41)	ND (0.39)	ND (0.38)
Naphthalene	41	0.54	6	27	<u>18 (1)</u>	<u>2.7 (0.063)</u>	ND (0.059)	0.1 D (0.09)	ND,D (0.095)	0.52 D (0.096)	0.16 D (0.094)
Phenanthrene	4600	--	14000	--	1.1 (0.1)	0.66 (0.043)	0.17 J (0.04)	ND (0.4)	ND (0.41)	0.6 (0.39)	0.5 (0.38)
Pyrene	4600	--	14000	--	0.54 J (0.24)	0.11 J (0.043)	0.24 (0.04)	ND (0.4)	ND (0.41)	ND (0.39)	ND (0.38)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
 - 6 Italicized concentrations exceed the Construction Worker Direct Contact.
 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-885-CS-13	PB-885-CS-14	PB-885-CS-15	PB-885-CS-2	PB-885-CS-3	PB-885-CS-4	PB-885-CS-5
Field Sample ID	Routine	Routine	Construction	Soil Migration	AST-885-CS-13	AST-885-CS-14	AST-885-CS-15	AST-885-CS-2	AST-885-CS-3	AST-885-CS-4	AST-885-CS-5
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007	3/14/2007
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.094)	ND,D (0.089)	ND,D (0.096)	<u>0.55 D (0.083)</u>	0.065 J,D (0.09)	0.19 D (0.081)	0.11 D (0.095)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND,D (0.094)	ND,D (0.089)	ND,D (0.096)	0.44 D (0.083)	0.48 D (0.09)	1.1 D (0.081)	1.1 D (0.095)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND,D (0.094)	ND,D (0.089)	ND,D (0.096)	1.6 D (0.083)	0.44 D (0.09)	1.7 D (0.081)	1.8 D (0.095)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	0.05 J,D (0.094)	ND,D (0.089)	ND,D (0.096)	1.1 D (0.083)	0.61 D (0.09)	3.4 D (0.081)	3.3 D (0.095)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	<u>1.9 D (0.094)</u>	ND,D (0.089)	ND,D (0.096)	<u>7.9 D (0.083)</u>	<u>18 D (0.09)</u>	<u>21 D (0.081)</u>	<u>22 D (0.095)</u>
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.38)	ND (0.43)	0.45 (0.4)	ND (0.41)	ND (0.38)	ND (0.38)	ND (0.38)
Benzo(a)anthracene	430	--	3200	--	ND (0.38)	ND (0.43)	0.76 (0.4)	ND (0.41)	ND (0.38)	ND (0.38)	ND (0.38)
Benzo(a)pyrene	43	--	7.7	--	ND (0.38)	ND (0.43)	0.46 (0.4)	ND (0.41)	ND (0.38)	ND (0.38)	ND (0.38)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.38)	ND (0.43)	0.68 (0.4)	ND (0.41)	ND (0.38)	ND (0.38)	ND (0.38)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.38)	ND (0.43)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.38)	ND (0.38)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.38)	ND (0.43)	0.56 (0.4)	ND (0.41)	ND (0.38)	ND (0.38)	ND (0.38)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.38)	ND (0.43)	ND (0.4)	0.49 (0.41)	3.3 (0.38)	ND (0.38)	ND (0.38)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.38)	ND (0.43)	ND (0.4)	ND (0.41)	ND (0.38)	ND (0.38)	ND (0.38)
Naphthalene	41	0.54	6	27	0.48 D (0.094)	ND,D (0.089)	ND,D (0.096)	<u>1.4 D (0.083)</u>	<u>4.1 D (0.09)</u>	<u>4.6 D (0.081)</u>	<u>4.3 D (0.095)</u>
Phenanthrene	4600	--	14000	--	1.2 (0.38)	ND (0.43)	1.6 (0.4)	0.61 (0.41)	3.9 (0.38)	ND (0.38)	2.5 (0.38)
Pyrene	4600	--	14000	--	ND (0.38)	ND (0.43)	1.1 (0.4)	ND (0.41)	ND (0.38)	ND (0.38)	ND (0.38)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
 - 6 Italicized concentrations exceed the Construction Worker Direct Contact.
 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-885-CS-6	PB-885-CS-7	PB-885-CS-8	PB-885-CS-9	PB-885-SS-10	PB-885-SS-1	PB-885-SS-2
Field Sample ID	Routine	Routine	Construction	Soil Migration	AST-885-CS-6	AST-885-CS-7	AST-885-CS-8	AST-885-CS-9	AST-885-SS-10	AST-885-SS-1	AST-885-SS-2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		3/14/2007	3/14/2007	3/14/2007	3/14/2007	11/30/2006	11/30/2006	11/30/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND,D (0.092)	ND,D (0.1)	ND,D (0.11)	ND,D (0.11)	0.11 J (0.034)	ND (0.028)	0.1 J (0.031)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND,D (0.092)	0.35 D (0.1)	0.25 D (0.11)	0.11 J,D (0.11)	1.2 (0.068)	ND (0.057)	1.2 (0.063)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND,D (0.092)	0.51 D (0.1)	0.34 D (0.11)	ND,D (0.11)	2.2 (0.068)	ND (0.057)	2.1 (0.063)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND,D (0.092)	0.23 D (0.1)	0.1 J,D (0.11)	ND,D (0.11)	0.85 (0.068)	ND (0.057)	1.6 (0.063)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	0.81 D (0.092)	<u>7.3 D (0.1)</u>	<u>3.1 D (0.11)</u>	1 D (0.11)	<u>17 (0.068)</u>	ND (0.057)	<u>21 (0.063)</u>
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)	ND (0.21)	ND (0.18)	ND (0.2)
Benzo(a)anthracene	430	--	3200	--	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)	ND (0.21)	ND (0.18)	ND (0.2)
Benzo(a)pyrene	43	--	7.7	--	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)	ND (0.21)	ND (0.18)	ND (0.2)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)	ND (0.21)	ND (0.18)	ND (0.2)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)	ND (0.21)	ND (0.18)	ND (0.2)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)	ND (0.21)	ND (0.18)	ND (0.2)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)	1.2 (0.21)	ND (0.18)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)	ND (0.21)	ND (0.18)	ND (0.2)
Naphthalene	41	0.54	6	27	0.19 D (0.092)	<u>1.2 D (0.1)</u>	<u>0.74 D (0.11)</u>	0.21 D (0.11)	<u>6.5 (0.068)</u>	ND (0.057)	<u>4.8 (0.063)</u>
Phenanthrene	4600	--	14000	--	0.72 (0.42)	ND (0.41)	1.9 (0.45)	1.2 (0.45)	2 (0.21)	ND (0.18)	0.88 J (0.2)
Pyrene	4600	--	14000	--	ND (0.42)	ND (0.41)	ND (0.45)	ND (0.45)	ND (0.21)	0.18 J (0.18)	ND (0.2)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-885-SS-3	PB-885-SS-4	PB-885-SS-5	PB-885-SS-6	PB-885-SS-7	PB-885-SS-8	PB-885-SS-9
Field Sample ID	Routine	Routine	Construction	Soil Migration	AST-885-SS-3	AST-885-SS-4	AST-885-SS-5	AST-885-SS-6	AST-885-SS-7	AST-885-SS-8	AST-885-SS-9
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Sample Date	Direct Contact		Direct Contact		11/30/2006	11/30/2006	11/30/2006	11/30/2006	11/30/2006	11/30/2006	11/30/2006
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.033)	0.068 J (0.026)	0.35 (0.031)	<u>2.6 (0.031)</u>	0.16 J (0.031)	ND (0.035)	ND (0.029)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.065)	ND (0.052)	1.7 (0.061)	5.4 (0.061)	2.9 (0.061)	ND (0.069)	0.11 J (0.059)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.065)	ND (0.052)	3.4 (0.061)	13 (0.061)	2.4 (0.061)	ND (0.069)	ND (0.059)
Methyl tert-butyl ether	2400	16	390	5900	NA	NA	NA	NA	NA	NA	NA
Toluene	8000	76	650	9800	ND (0.065)	0.1 J (0.052)	3.3 (0.061)	26 (0.61)	3.4 (0.061)	ND (0.069)	ND (0.059)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	NA	NA	NA	NA	NA
Xylenes (total)	240	1.5	51	340	ND (0.065)	<u>4.4 (0.052)</u>	<u>27 (0.061)</u>	<u>97 (0.61)</u>	<u>66 (0.61)</u>	ND (0.069)	<u>1.8 (0.059)</u>
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.038)	ND (0.18)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	0.2 J (0.2)
Benzo(a)anthracene	430	--	3200	--	0.076 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)	0.22 J (0.2)	ND (0.2)	0.49 J (0.2)
Benzo(a)pyrene	43	--	7.7	--	0.069 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)	ND (0.2)	0.22 J (0.2)	0.36 J (0.2)
Benzo(b)fluoranthene	430	--	3200	--	0.075 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)	ND (0.2)	0.24 J (0.2)	0.46 J (0.2)
Benzo(g,h,i)perylene	4600	--	14000	--	0.046 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	0.26 J (0.2)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	0.077 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)	0.22 J (0.2)	ND (0.2)	0.55 J (0.2)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.038)	ND (0.18)	ND (0.2)	1.2 (0.2)	1.2 (0.2)	ND (0.2)	0.47 J (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.046 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	0.3 J (0.2)
Naphthalene	41	0.54	6	27	ND (0.065)	0.11 J (0.052)	<u>5.6 (0.061)</u>	<u>15 (0.061)</u>	<u>11 (0.061)</u>	ND (0.069)	<u>0.55 (0.059)</u>
Phenanthrene	4600	--	14000	--	0.12 J (0.038)	0.5 J (0.18)	1.5 (0.2)	2 (0.2)	2.3 (0.2)	ND (0.2)	1.4 (0.2)
Pyrene	4600	--	14000	--	0.092 J (0.038)	ND (0.18)	ND (0.2)	ND (0.2)	ND (0.2)	0.24 J (0.2)	0.82 J (0.2)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	NA	NA	NA	NA	NA	NA	NA
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
- 5 Underlined concentrations exceed the Routine Worker VI.
- 6 Italicized concentrations exceed the Construction Worker Direct Contact.
- 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					S-119D	S-216	S-218D	S-218D	S-219	S-229	S-282
Field Sample ID	Routine	Routine	Construction	Soil Migration	BHS119D-040105-1-1.5	BH-S216-032505-1-1.5	AOI4-S218D-6-6.5-20160114	AOI4-S218D-0.5-1.0-20160205	BH-S219-032505-1-1.5	BH-S229-032505-1.5-2	S-282_1-2
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	1 - 1.5	1 - 1.5	6 - 6.5	0.5 - 1	1 - 1.5	1.5 - 2	1 - 2
Sample Date	Direct Contact		Direct Contact		4/1/2005	3/25/2005	1/14/2016	2/5/2016	3/25/2005	3/25/2005	4/27/2010
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.005)	ND (0.005)	0.0114 (0.00053)	ND (0.00055)	ND (0.005)	ND (0.005)	ND (0.004)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.005)	ND (0.005)	0.088 (0.0021)	ND (0.0022)	ND (0.005)	ND (0.005)	ND (0.004)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.005)	ND (0.005)	0.207 (0.12)	ND (0.0011)	ND (0.005)	ND (0.005)	ND (0.004)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.005)	ND (0.005)	ND (0.0011)	ND (0.0011)	ND (0.005)	0.014 (0.005)	ND (0.004)
Toluene	8000	76	650	9800	ND (0.005)	ND (0.005)	0.0234 (0.0011)	ND (0.0011)	ND (0.005)	ND (0.005)	ND (0.004)
1,2,4-Trimethylbenzene	180	0.92	70	250	NA	NA	<u>1.17 (0.24)</u>	ND (0.0022)	NA	NA	ND (0.004)
1,3,5-Trimethylbenzene	220	0.92	99	240	NA	NA	0.434 (0.24)	ND (0.0022)	NA	NA	ND (0.004)
Xylenes (total)	240	1.5	51	340	ND (0.005)	ND (0.005)	0.418 (0.12)	ND (0.0011)	ND (0.005)	ND (0.005)	ND (0.004)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.38)	ND (0.38)	ND (0.038)	0.0207 J (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Benzo(a)anthracene	430	--	3200	--	ND (0.38)	ND (0.38)	ND (0.038)	0.0748 (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Benzo(a)pyrene	43	--	7.7	--	ND (0.38)	ND (0.38)	ND (0.038)	0.0952 (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.38)	ND (0.38)	ND (0.038)	0.106 (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.38)	ND (0.38)	ND (0.038)	0.0794 (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.38)	ND (0.38)	ND (0.038)	0.0966 (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.38)	ND (0.38)	0.231 (0.038)	ND (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.38)	ND (0.38)	<u>2.44 (0.038)</u>	0.0317 J (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Phenanthrene	4600	--	14000	--	ND (0.38)	ND (0.38)	0.371 (0.038)	0.11 (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Pyrene	4600	--	14000	--	ND (0.38)	ND (0.38)	0.022 J (0.038)	0.127 (0.039)	ND (0.4)	ND (0.37)	ND (0.2)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	24.9 (2.24)	60.8 (2.26)	13.3 (2.2)	500 (2.4)	8.99 (2.37)	16.7 (2.16)	87.3 (0.229)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Only compounds with at least one detection are shown.
 - Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - Underlined concentrations exceed the Routine Worker VI.
 - Italicized concentrations exceed the Construction Worker Direct Contact.
 - Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					S-364	S-364	S-364	S-365	S-365	S-365	S-366
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4_S-364_5-1_30413	AOI4_S-364_4-5_30413	S-364 @ 19'_031913	S-365_0-2'	S-365_4-6'	S-365 @ 12'-14'_031813	AOI4_S-366_0-1_30513
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	0.5 - 1	4 - 5	18.5 - 19	0 - 2	4 - 6	12 - 14	0 - 1
Sample Date	Direct Contact		Direct Contact		3/4/2013	3/4/2013	3/19/2013	3/4/2013	3/4/2013	3/18/2013	3/5/2013
Comments											
Volatile Organic Compounds											
Benzene	63	0.46	8.7	98	ND (0.00074)	0.189 J (0.21)	0.241 (0.1)	ND (0.00055)	0.0269 (0.00057)	0.0004 J (0.0011)	ND (0.0009)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	1000	6.1	87	1000	ND (0.0037)	0.755 J (1)	2.36 (0.5)	ND (0.0028)	0.0063 (0.0028)	ND (0.0053)	ND (0.0045)
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2300	15	1300	820	ND (0.00074)	1.43 (0.21)	0.14 (0.1)	ND (0.00055)	0.0085 (0.00057)	ND (0.0011)	ND (0.0009)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00074)	ND (0.21)	ND (0.1)	ND (0.00055)	0.00024 J (0.00057)	ND (0.0011)	ND (0.0009)
Toluene	8000	76	650	9800	ND (0.00074)	ND (0.21)	ND (0.1)	ND (0.00055)	0.0025 (0.00057)	ND (0.0011)	ND (0.0009)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0037)	<u>4.3 (1)</u>	ND (0.5)	ND (0.0028)	0.0025 J (0.0028)	ND (0.0053)	ND (0.0045)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0037)	<u>1.88 (1)</u>	ND (0.5)	ND (0.0028)	0.0027 J (0.0028)	ND (0.0053)	ND (0.0045)
Xylenes (total)	240	1.5	51	340	ND (0.00074)	<u>2.25 (0.21)</u>	0.222 (0.1)	ND (0.00055)	0.0098 (0.00057)	ND (0.0011)	ND (0.0009)
Semivolatile Organic Compounds											
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA
Anthracene	46000	--	46000	--	ND (0.035)	ND (0.041)	ND (0.039)	ND (0.033)	0.356 (0.039)	ND (0.034)	ND (0.035)
Benzo(a)anthracene	430	--	3200	--	ND (0.035)	ND (0.041)	ND (0.039)	0.02 J (0.033)	0.841 (0.039)	ND (0.034)	0.0154 J (0.035)
Benzo(a)pyrene	43	--	7.7	--	ND (0.035)	ND (0.041)	ND (0.039)	0.0242 J (0.033)	0.825 (0.039)	ND (0.034)	0.0169 J (0.035)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.035)	ND (0.041)	ND (0.039)	0.035 (0.033)	0.802 (0.039)	ND (0.034)	0.0177 J (0.035)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.035)	ND (0.041)	ND (0.039)	0.0292 J (0.033)	0.545 (0.039)	ND (0.034)	0.0212 J (0.035)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	43000	--	320000	--	ND (0.035)	ND (0.041)	ND (0.039)	0.0279 J (0.033)	0.983 (0.039)	ND (0.034)	0.0139 J (0.035)
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	6200	--	18000	--	ND (0.035)	ND (0.041)	0.0934 (0.039)	ND (0.033)	0.386 (0.039)	ND (0.034)	ND (0.035)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.035)	ND (0.041)	ND (0.039)	ND (0.033)	0.314 (0.039)	ND (0.034)	ND (0.035)
Phenanthrene	4600	--	14000	--	ND (0.035)	0.0402 J (0.041)	0.172 (0.039)	ND (0.033)	2.18 (0.039)	ND (0.034)	ND (0.035)
Pyrene	4600	--	14000	--	0.0237 J (0.035)	0.0243 J (0.041)	0.0583 (0.039)	0.0295 J (0.033)	1.97 (0.039)	ND (0.034)	ND (0.035)
Metals											
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	2240	--	2240	45000	13 (2.3)	15.2 (2.3)	18.5 (2)	79.1 (2.2)	222 (2.3)	4.2 (2.2)	14.2 (11)
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
5 Underlined concentrations exceed the Routine Worker VI.
6 Italicized concentrations exceed the Construction Worker Direct Contact.
7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					S-366	S-366	S-367	S-367	S-367	S-367	S-373	S-379
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4_S-366_4.5-5.5_30513	S-366@14-16_031513	S-367_0-2'	S-367@14'_031313	S-367_031313@6'	AOI4-S-373_4-6'	S-379_0-2'	
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	4.5 - 5.5	14 - 16	0 - 2	13.5 - 14	5.5 - 6	4 - 6	0 - 2	
Sample Date	Direct Contact		Direct Contact		3/5/2013	3/15/2013	3/5/2013	3/13/2013	3/13/2013	3/19/2013	2/28/2013	
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	ND (0.0011)	0.00041 J (0.0011)	ND (0.00055)	0.00054 J (0.0012)	ND (0.095)	<u>1.25 (0.11)</u>	ND (0.00088)	
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Cumene	1000	6.1	87	1000	ND (0.0053)	ND (0.0056)	0.0135 (0.0028)	0.017 (0.0058)	0.431 J (0.47)	0.718 (0.54)	ND (0.0044)	
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.0011)	0.00081 (0.00055)	ND (0.0012)	ND (0.095)	2.12 (0.11)	ND (0.00088)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0011)	ND (0.0011)	ND (0.00055)	ND (0.0012)	ND (0.095)	ND (0.11)	ND (0.00088)	
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.0011)	0.00067 (0.00055)	ND (0.0012)	ND (0.095)	0.339 (0.11)	ND (0.00088)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0053)	ND (0.0056)	0.00059 J (0.0028)	ND (0.0058)	ND (0.47)	<u>2.56 (0.54)</u>	ND (0.0044)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0053)	ND (0.0056)	0.00027 J (0.0028)	ND (0.0058)	ND (0.47)	<u>2.88 (0.54)</u>	ND (0.0044)	
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.0011)	0.005 (0.00055)	ND (0.0012)	ND (0.095)	<u>3.76 (0.11)</u>	ND (0.00088)	
Semivolatile Organic Compounds												
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA	
Anthracene	46000	--	46000	--	ND (0.04)	ND (0.1)	0.209 (0.036)	ND (0.1)	ND (0.11)	ND (0.039)	ND (0.035)	
Benzo(a)anthracene	430	--	3200	--	ND (0.04)	ND (0.1)	0.468 (0.036)	ND (0.1)	ND (0.11)	ND (0.039)	ND (0.035)	
Benzo(a)pyrene	43	--	7.7	--	ND (0.04)	ND (0.1)	0.402 (0.036)	ND (0.1)	ND (0.11)	ND (0.039)	ND (0.035)	
Benzo(b)fluoranthene	430	--	3200	--	ND (0.04)	ND (0.1)	0.409 (0.036)	ND (0.1)	ND (0.11)	ND (0.039)	ND (0.035)	
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.04)	ND (0.1)	0.346 (0.036)	ND (0.1)	ND (0.11)	ND (0.039)	ND (0.035)	
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA	
Chrysene	43000	--	320000	--	ND (0.04)	ND (0.1)	0.729 (0.036)	ND (0.1)	ND (0.11)	ND (0.039)	ND (0.035)	
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Fluorene	6200	--	18000	--	ND (0.04)	ND (0.1)	0.394 (0.036)	ND (0.1)	ND (0.11)	0.221 (0.039)	ND (0.035)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	ND (0.04)	ND (0.1)	ND (0.036)	ND (0.1)	ND (0.11)	0.362 (0.039)	ND (0.035)	
Phenanthrene	4600	--	14000	--	ND (0.04)	ND (0.1)	0.839 (0.036)	ND (0.1)	ND (0.11)	0.59 (0.039)	ND (0.035)	
Pyrene	4600	--	14000	--	ND (0.04)	ND (0.1)	1.04 (0.036)	ND (0.1)	ND (0.11)	ND (0.039)	ND (0.035)	
Metals												
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Lead	2240	--	2240	45000	10.9 (2.7)	4.3 (0.99)	258 (2.3)	2.6 (1)	6.3 (1)	8.5 (1.9)	1.5 J (2.2)	
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA	
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA	
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Only compounds with at least one detection are shown.
 - 4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
 - 5 Underlined concentrations exceed the Routine Worker VI.
 - 6 Italicized concentrations exceed the Construction Worker Direct Contact.
 - 7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					S-379	S-379	S-381	S-381	S-381	S-381	S-381	S-39D
Field Sample ID	Routine	Routine	Construction	Soil Migration	S-379_4-5'	S-379_8-9'	AOI4-S-381_0-5_31513	AOI4-S-381_2-3_31513	S-381 @ 12'_04242013	S-381 @ 24'_04252013	AOI4-S-39D-1.5-2-20160121	
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	4 - 5	8 - 9	0 - 0.5	2 - 3	11.5 - 12	23.5 - 24	1.5 - 2	
Sample Date	Direct Contact		Direct Contact		2/28/2013	2/28/2013	3/15/2013	3/15/2013	4/24/2013	4/24/2013	1/21/2016	
Comments												
Volatile Organic Compounds												
Benzene	63	0.46	8.7	98	0.00024 J (0.00089)	ND (0.00045)	ND (0.001)	0.242 J (0.59)	0.0403 (0.00089)	<u>1.11 (0.5)</u>	ND (0.00065)	
sec-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Cumene	1000	6.1	87	1000	ND (0.0044)	ND (0.0022)	ND (0.0051)	1.97 J (2.9)	0.0033 J (0.0045)	<u>11.7 (2.5)</u>	ND (0.0026)	
Cyclohexane	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Ethyl Benzene	2300	15	1300	820	ND (0.00089)	ND (0.00045)	ND (0.001)	5.54 (0.59)	0.0021 (0.00089)	0.439 J (0.5)	ND (0.0013)	
Methyl tert-butyl ether	2400	16	390	5900	ND (0.00089)	ND (0.00045)	ND (0.001)	ND (0.59)	ND (0.00089)	ND (0.5)	ND (0.0013)	
Toluene	8000	76	650	9800	ND (0.00089)	ND (0.00045)	ND (0.001)	0.419 J (0.59)	0.0076 (0.00089)	0.2 J (0.5)	ND (0.0013)	
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0044)	ND (0.0022)	ND (0.0051)	<u>29.9 (2.9)</u>	0.0032 J (0.0045)	0.518 J (2.5)	ND (0.0026)	
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0044)	ND (0.0022)	ND (0.0051)	<u>11.9 (2.9)</u>	ND (0.0045)	0.543 J (2.5)	ND (0.0026)	
Xylenes (total)	240	1.5	51	340	ND (0.00089)	ND (0.00045)	ND (0.001)	<u>17.7 (0.59)</u>	0.0056 (0.00089)	1.01 (0.5)	ND (0.0013)	
Semivolatile Organic Compounds												
Acenaphthene	9300	--	9200	--	NA	NA	NA	NA	NA	NA	NA	
Anthracene	46000	--	46000	--	0.0977 (0.036)	ND (0.041)	0.0439 J (0.12)	ND (0.12)	ND (0.11)	1.79 (0.12)	ND (0.035)	
Benzo(a)anthracene	430	--	3200	--	0.223 (0.036)	ND (0.041)	0.143 (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.035)	
Benzo(a)pyrene	43	--	7.7	--	0.194 (0.036)	ND (0.041)	0.0854 J (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.035)	
Benzo(b)fluoranthene	430	--	3200	--	0.225 (0.036)	ND (0.041)	0.143 (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.035)	
Benzo(g,h,i)perylene	4600	--	14000	--	0.12 (0.036)	ND (0.041)	0.0814 J (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.035)	
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	NA	NA	NA	NA	
Chrysene	43000	--	320000	--	0.229 (0.036)	ND (0.041)	0.158 (0.12)	ND (0.12)	ND (0.11)	0.0624 J (0.12)	ND (0.035)	
Fluoranthene	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Fluorene	6200	--	18000	--	0.043 (0.036)	ND (0.041)	ND (0.12)	ND (0.12)	ND (0.11)	5.02 (0.12)	ND (0.035)	
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	41	0.54	6	27	0.0194 J (0.036)	ND (0.041)	ND (0.12)	<u>1.18 (0.12)</u>	ND (0.11)	<u>5.48 (0.12)</u>	ND (0.035)	
Phenanthrene	4600	--	14000	--	0.296 (0.036)	ND (0.041)	0.598 (0.12)	ND (0.12)	ND (0.11)	13 (0.58)	ND (0.035)	
Pyrene	4600	--	14000	--	0.351 (0.036)	ND (0.041)	0.381 (0.12)	ND (0.12)	ND (0.11)	1.11 (0.12)	ND (0.035)	
Metals												
Cobalt	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Lead	2240	--	2240	45000	206 (2.4)	10 (2.4)	25800 (110)	2650 (5.6)	8.5 (0.9)	5.6 (0.9)	49.5 (6.6)	
Nickel	6200	--	700	1700	NA	NA	NA	NA	NA	NA	NA	
Vanadium	1600	--	350	2800	NA	NA	NA	NA	NA	NA	NA	
Zinc	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Only compounds with at least one detection are shown.
4 Boldfaced concentrations exceed the Routine Worker Direct Contact.
5 Underlined concentrations exceed the Routine Worker VI.
6 Italicized concentrations exceed the Construction Worker Direct Contact.
7 Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table D1
Historical Soil Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					S-39D	S-415	S-415	S-416	S-416
Field Sample ID	Routine	Routine	Construction	Soil Migration	AOI4-S39D-7.5-8.0-20160208	AOI4_S-415_0-2_101215	AOI4_S-415_16-18_101215	AOI4-S-416-0-2-20160620	AOI4-S-416-14-15-20160711
Collection Depth (ft bgs)	Worker Soil	Worker Soil VI	Worker Soil	to GW	7.5 - 8	0 - 2	16 - 18	0 - 2	14 - 15
Sample Date	Direct Contact		Direct Contact		2/8/2016	10/12/2015	10/12/2015	6/20/2016	7/11/2016
Comments									
Volatile Organic Compounds									
Benzene	63	0.46	8.7	98	ND (0.00068)	0.0013 (0.00052)	ND (0.25)	0.00315 (0.00118)	ND (0.00112)
sec-Butylbenzene	--	--	--	--	NA	NA	NA	ND (0.00118)	ND (0.00112)
tert-Butylbenzene	--	--	--	--	NA	NA	NA	ND (0.00118)	ND (0.00112)
Cumene	1000	6.1	87	1000	ND (0.0027)	ND (0.0021)	5.65 (1)	ND (0.0118)	ND (0.0112)
Cyclohexane	--	--	--	--	NA	NA	NA	ND (0.00118)	0.00791 (0.00112)
Ethyl Benzene	2300	15	1300	820	ND (0.0014)	ND (0.001)	ND (0.51)	ND (0.00118)	ND (0.00112)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0014)	ND (0.001)	ND (0.51)	ND (0.00118)	ND (0.00112)
Toluene	8000	76	650	9800	ND (0.0014)	0.00035 J (0.001)	ND (0.51)	ND (0.00591)	ND (0.00562)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0027)	ND (0.0021)	ND (1)	ND (0.00118)	ND (0.00112)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0027)	ND (0.0021)	ND (1)	ND (0.00118)	ND (0.00112)
Xylenes (total)	240	1.5	51	340	ND (0.0014)	0.0007 J (0.001)	ND (0.51)	ND (0.00355)	ND (0.00337)
Semivolatile Organic Compounds									
Acenaphthene	9300	--	9200	--	NA	NA	NA	ND (0.039)	ND (0.0371)
Anthracene	46000	--	46000	--	ND (0.034)	0.0698 (0.037)	0.156 (0.035)	ND (0.039)	0.0505 (0.0371)
Benzo(a)anthracene	430	--	3200	--	ND (0.034)	0.249 (0.037)	0.0595 (0.035)	ND (0.039)	0.137 (0.0371)
Benzo(a)pyrene	43	--	7.7	--	ND (0.034)	0.316 (0.037)	0.0379 (0.035)	ND (0.039)	0.104 (0.0371)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.034)	0.395 (0.037)	0.0258 J (0.035)	0.0446 (0.039)	0.13 (0.0371)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.034)	0.228 (0.037)	0.0143 J (0.035)	ND (0.039)	0.0548 (0.0371)
Benzo(k)fluoranthene	4300	--	32000	--	NA	NA	NA	ND (0.039)	0.0489 (0.0371)
Chrysene	43000	--	320000	--	ND (0.034)	0.245 (0.037)	0.0736 (0.035)	ND (0.039)	0.118 (0.0371)
Fluoranthene	--	--	--	--	NA	NA	NA	0.0419 (0.039)	0.252 OE (0.0371)
Fluorene	6200	--	18000	--	ND (0.034)	0.0196 J (0.037)	0.536 (0.035)	ND (0.039)	ND (0.0371)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	ND (0.039)	0.0516 (0.0371)
Naphthalene	41	0.54	6	27	ND (0.034)	0.0651 (0.037)	ND (0.035)	ND (0.039)	ND (0.0371)
Phenanthrene	4600	--	14000	--	ND (0.034)	0.254 (0.037)	1.04 (0.035)	ND (0.039)	0.164 (0.0371)
Pyrene	4600	--	14000	--	ND (0.034)	0.329 (0.037)	0.143 (0.035)	ND (0.039)	0.219 (0.0371)
Metals									
Cobalt	--	--	--	--	NA	NA	NA	6.02 (1.18)	5.04 (1.12)
Lead	2240	--	2240	45000	5.2 (2.1)	241 (2.2)	3.9 (2.1)	86.2 (0.591)	63.5 (0.562)
Nickel	6200	--	700	1700	NA	NA	NA	20.9 (2.37)	11.3 (2.25)
Vanadium	1600	--	350	2800	NA	NA	NA	46.4 (2.37)	26.3 (2.25)
Zinc	--	--	--	--	NA	NA	NA	175 (5.91)	60.7 (5.62)

Notes:

- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- Only compounds with at least one detection are shown.
- Boldfaced concentrations exceed the Routine Worker Direct Contact.
- Underlined concentrations exceed the Routine Worker VI.
- Italicized concentrations exceed the Construction Worker Direct Contact.
- Grey shaded concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	MW-1	MW-1	MW-4	S-103	S-119	S-119	S-119
Field Sample ID	MW1-050605	MW-4_06_17_2013	MW4-050605	S-103-20161012-WG	S-119	S119-050305	S-119_06_12_2013
Collection Depth (ft bgs)	5/6/2005	6/17/2013	5/6/2005	10/12/2016	10/20/2004	5/3/2005	6/12/2013
Sample Date							
Comments							
Physical Parameters							
pH [SU]	--	--	--	--	--	--	--
Volatile Organic Compounds							
Benzene	0.3	550	3.8	4	0.25	130	0.1 (0.005) 0.128 MS (0.001) ND (0.005) ND,SL (0.01) ND (0.001) 0.005 (0.005) ND (0.001)
sec-Butylbenzene	--	--	--	--	--	--	NA NA NA ND,SL (0.01) NA NA NA
tert-Butylbenzene	--	--	--	--	--	--	NA NA NA ND,SL (0.01) NA NA NA
Cumene	37	9100	63	30	4	2.6	0.01 (0.005) 0.0035 MS (0.002) ND (0.005) 0.0235 SL (0.01) ND (0.005) ND (0.005) ND (0.002)
Cyclohexane	--	--	--	--	--	--	NA NA NA ND,SL (0.01) NA NA NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000028) ND,MS (0.00002) ND (0.000028) ND,SL (0.00001) ND (0.00002) ND (0.000028) ND (0.00002)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005) ND,MS (0.001) ND (0.005) ND,SL (0.01) ND (0.005) ND (0.005) ND (0.001)
Ethyl Benzene	2	22000	150	40	9.7	13	0.019 (0.005) 0.00091 J,MS (0.001) ND (0.005) ND,SL (0.01) ND (0.005) ND (0.005) ND (0.001)
Hexane	--	--	--	--	--	--	NA NA NA ND,SL (0.01) NA NA NA
2-Hexanone	--	--	--	--	--	--	NA NA NA NA NA NA NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005) 0.0112 MS (0.001) ND (0.005) ND,SL (0.01) ND (0.005) ND (0.005) ND (0.001)
tert Butyl alcohol	--	--	--	--	--	--	NA NA NA NA NA NA NA
Toluene	25	100000	700	200	45	52	0.01 (0.005) 0.0101 MS (0.001) ND (0.005) ND,SL (0.05) ND (0.005) ND (0.005) ND (0.001)
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA 0.0015 J,MS (0.002) NA ND,SL (0.01) NA NA ND (0.002)
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA 0.0037 MS (0.002) NA ND,SL (0.01) NA NA ND (0.002)
Xylenes (total)	3.7	1900	13	17	0.86	210	0.027 (0.005) 0.0081 MS (0.001) ND (0.005) ND,SL (0.03) ND (0.01) ND (0.005) ND (0.001)
Semivolatile Organic Compounds							
Acenaphthene	57	--	--	3900	--	9	NA NA NA 0.00449 SL (0.0005) NA NA NA
Anthracene	240	--	--	19000	--	40	NA ND,MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA 0.00244 MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA 0.00245 MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA 0.00248 MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA 0.00183 MS (0.00011) NA ND,SL (0.0005) NA NA ND (0.0001)
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA NA NA ND,SL (0.0005) NA NA NA
1,1-Biphenyl	--	--	--	--	--	--	NA NA NA ND,SL (0.2) NA NA NA
Chrysene	16	--	--	140000	--	1.3	ND (0.01) 0.00294 MS (0.00011) ND (0.01) ND,SL (0.0005) ND (0.00014) ND (0.01) ND (0.0001)
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA NA NA ND,SL (0.0005) NA NA NA
Fluoranthene	--	--	--	--	--	--	NA NA NA 0.000579 SL (0.0005) NA NA NA
Fluorene	97	--	--	7800	--	7	ND (0.01) ND,MS (0.00011) ND (0.01) 0.00518 SL (0.0005) ND (0.01) ND (0.01) ND (0.0001)
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA NA NA ND,SL (0.0005) NA NA NA
2-Methylnaphthalene	--	--	--	--	--	--	NA NA NA 0.0101 SL (0.0025) NA NA NA
3&4-Methylphenol	--	--	--	--	--	--	NA NA NA ND,SL (0.2) NA NA NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.032 (0.01) 0.0277 MS (0.0011) ND (0.01) 0.00329 B,SL (0.0025) ND (0.005) ND (0.01) ND (0.0001)
Phenanthrene	73	--	--	5800	--	1	ND (0.01) 0.00454 MS (0.00011) ND (0.01) 0.0101 SL (0.0005) ND (0.01) ND (0.01) ND (0.0001)
Phenol	--	--	--	--	--	--	NA NA NA ND,SL (0.2) NA NA NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA NA NA ND,SL (0.06) NA NA NA
Pyrene	50	--	--	5800	--	3	ND (0.01) 0.00372 MS (0.00011) ND (0.01) 0.00228 SL (0.0005) ND (0.01) ND (0.01) ND (0.0001)
Perfluoroalkyl and Polyfluoroalkyl Substances							
Perfluorooctanoic Acid	--	--	--	--	--	--	NA NA NA NA NA NA NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	MW-1	MW-1	MW-4	S-103	S-119	S-119	S-119
Field Sample ID	MW1-050605	MW-4_06_17_2013	MW4-050605	S-103-20161012-WG	S-119	S119-050305	S-119_06_12_2013
Collection Depth (ft bgs)	5/6/2005	6/17/2013	5/6/2005	10/12/2016	10/20/2004	5/3/2005	6/12/2013
Sample Date							
Comments							
Nonpotable GW Use	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW				
Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI						
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	ND (0.001)
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	NA
Vanadium	0.14	--	--	6.9	--	100	NA
Zinc	--	--	--	--	--	--	NA

Notes:

- All concentrations reported in mg/L; detection limits in parentheses.
- Only compounds with at least one detection are shown.
- MS, OE, and SL are unknown qualifiers.
- Boldfaced concentrations exceed the Nonpotable GW Use.
- No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- No concentrations exceed the Routine Worker GW VI.
- Underlined concentrations exceed the Construction Worker GW Direct Contact.
- Italicized concentrations exceed the Off-Site Resident GW VI.
- Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	S-119		S-119		S-119D		S-119D		S-119D		S-119D		
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-119-20160812-WG	S-119-20161010-WG	S119D-050305	S-119D_04062011	D_04062011 FILTERED	S-119D_06282011	D_06282011 FILTERED
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	8/12/2016	10/10/2016	5/3/2005	4/6/2011	4/6/2011	6/28/2011	6/28/2011
Sample Date		Vol to		Direct Contact	VI								
Comments		Outdoor Air											
Physical Parameters													
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	0.00283 (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA
sec-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA
Cumene	37	9100	63	30	4	2.6	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.002)	NA	ND (0.002)	NA
Cyclohexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.000029)	ND (0.000029)	NA	ND (0.000029)	NA
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA
Hexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	ND (0.001)	ND (0.005)	0.0005 J (0.001)	NA	0.0006 J (0.001)	NA
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.001)	ND (0.001)	NA	ND (0.002)	NA	ND (0.002)	NA
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.001)	ND (0.001)	NA	ND (0.002)	NA	ND (0.002)	NA
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.003)	ND (0.003)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA
Semivolatile Organic Compounds													
Acenaphthene	57	--	--	3900	--	9	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
Anthracene	240	--	--	19000	--	40	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA
Chrysene	16	--	--	140000	--	1.3	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	--	--	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
Fluorene	97	--	--	7800	--	7	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	--	--	--	--	--	ND (0.00025)	ND (0.00025)	NA	NA	NA	NA	NA
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.00025)	ND (0.00025)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA
Phenanthrene	73	--	--	5800	--	1	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA
Phenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	NA	NA	NA	NA	NA
Pyrene	50	--	--	5800	--	3	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA
Perfluoroalkyl and Polyfluoroalkyl Substances													
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-119 S-119-20160812-WG	S-119 S-119-20161010-WG	S-119D S119D-050305	S-119D S-119D_04062011	S-119D ID_04062011 FILTERED	S-119D S-119D_06282011	S-119D ID_06282011 FILTERED	S-119D
Collection Depth (ft bgs)	Sample Date							8/12/2016	10/10/2016	5/3/2005	4/6/2011	4/6/2011	6/28/2011	6/28/2011	
Comments															
Metals															
Arsenic		0.021	--	--	53	--	1.4	NA	NA	NA	0.0051 (0.002)	NA	0.005 (0.002)	NA	NA
Cobalt		--	--	--	--	--	--	NA	NA	NA	0.0079 (0.005)	NA	0.0075 (0.005)	NA	NA
Lead		--	--	--	--	--	2.5	NA	NA	ND (0.001)	0.0012 (0.001)	NA	0.001 (0.001)	NA	NA
Manganese		--	--	--	--	--	--	NA	NA	NA	0.287 (0.005)	NA	0.286 (0.005)	NA	NA
Mercury		--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic		0.021	--	--	53	--	1.4	NA	NA	NA	NA	0.0046 (0.002)	NA	0.0046 (0.002)	NA
Barium		--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (total)		--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt		--	--	--	--	--	--	0.00415 (0.002)	0.00365 (0.002)	NA	NA	0.0074 (0.005)	NA	0.0066 (0.005)	NA
Lead		--	--	--	--	--	2.5	ND (0.002)	ND (0.002)	NA	NA	ND (0.001)	NA	ND (0.001)	NA
Manganese		--	--	--	--	--	--	NA	NA	NA	NA	0.282 (0.005)	NA	0.277 (0.005)	NA
Nickel		1.3	--	--	86	--	52	0.00305 (0.002)	0.00262 B (0.002)	NA	NA	NA	NA	NA	NA
Vanadium		0.14	--	--	6.9	--	100	ND (0.005)	ND (0.005)	NA	NA	NA	NA	NA	NA
Zinc		--	--	--	--	--	--	0.04 (0.025)	ND (0.025)	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-119D	S-119D	S-119D	S-119D	S-119D	S-119D	S-120
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-119D_52312	S-119D_081612	S-119D_102512	S-119D_032613	S-119D-20160819-WG	S-119D-20161011-WG	S-120~10/20/2004	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	5/23/2012	8/16/2012	10/25/2012	3/26/2013	8/19/2016	10/11/2016	10/20/2004	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.0022 (0.001)	ND (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
Cumene	37	9100	63	30	4	2.6	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	ND (0.005)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.000029)	ND (0.00002)	ND (0.00002)	ND (0.00001)	ND (0.00001)	ND (0.00002)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	0.0005 J (0.001)	ND (0.001)	0.00043 J (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	NA	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	NA	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.01)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Anthracene	240	--	--	19000	--	40	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00014)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Fluorene	97	--	--	7800	--	7	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.01)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.00025)	ND (0.00025)	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.0002 J (0.0005)	0.0001 J (0.0005)	ND (0.005)	ND (0.0001)	ND (0.00025)	ND (0.00025)	ND (0.005)	
Phenanthrene	73	--	--	5800	--	1	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.01)	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.003)	ND (0.003)	NA	
Pyrene	50	--	--	5800	--	3	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.01)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Table D2
Historical Groundwater Sampling Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-119D	S-119D	S-119D	S-119D	S-119D	S-119D	S-120
							S-119D_52312	S-119D_081612	S-119D_102512	S-119D_032613	S-119D-20160819-WG	S-119D-20161011-WG	S-120~10/20/2004
							5/23/2012	8/16/2012	10/25/2012	3/26/2013	8/19/2016	10/11/2016	10/20/2004
Metals													
Arsenic	0.021	--	--	53	--	1.4	0.004 (0.002)	0.0042 (0.002)	0.0033 (0.003)	0.0034 (0.003)	NA	NA	NA
Cobalt	--	--	--	--	--	--	0.0068 (0.005)	0.0072 (0.005)	ND (0.05)	0.006 J (0.05)	NA	NA	NA
Lead	--	--	--	--	--	2.5	0.00028 J (0.001)	0.00063 J (0.001)	0.0048 (0.003)	ND (0.003)	NA	NA	NA
Manganese	--	--	--	--	--	--	0.259 (0.005)	0.255 (0.005)	0.256 (0.015)	0.268 (0.015)	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	0.000057 J (0.0002)	ND (0.0002)	ND (0.0002)	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	ND (0.002)	0.0029 (0.002)	0.0036 (0.003)	0.0021 J (0.003)	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	0.0063 (0.005)	0.0068 (0.005)	ND (0.05)	0.0057 J (0.05)	ND (0.002)	0.00574 (0.002)	NA
Lead	--	--	--	--	--	2.5	ND (0.001)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.005)
Manganese	--	--	--	--	--	--	0.253 (0.005)	0.251 (0.005)	0.283 (0.015)	0.277 (0.015)	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	NA	NA	0.00466 B (0.002)	0.00501 B (0.002)	NA
Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	NA	ND (0.005)	ND (0.005)	NA
Zinc	--	--	--	--	--	--	NA	NA	NA	NA	0.0412 (0.025)	ND (0.025)	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-120	S-120	S-120	S-120	S-120	S-120	S-120
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S120-050305	S-120~11/29/2006	S-120~12/14/2007	S-120_110508	S-120~11/11/2010	S-120_20150518	S-120~11/18/2011	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	5/3/2005	11/29/2006	12/14/2007	11/5/2008	11/11/2010	5/18/2015	11/18/2011	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.005)	ND (0.0005)	ND (0.0005)	0.0005 J (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Cumene	37	9100	63	30	4	2.6	ND (0.005)	ND (0.001)	ND (0.0005)	ND (0.002)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.0000097)	ND (0.0000095)	ND (0.000029)	ND (0.0000098)	ND (0.0000097)	ND (0.0000096)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005)	ND (0.001)	ND (0.0005)	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.005)	ND (0.0008)	ND (0.0005)	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)	ND (0.0005)	NA	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.0007)	ND (0.0005)	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	NA	NA	ND (0.002)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	NA	NA	ND (0.002)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.005)	ND (0.0008)	ND (0.0005)	ND (0.001)	ND (0.0005)	ND (0.0005)	ND (0.0005)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA	
Anthracene	240	--	--	19000	--	40	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	NA	NA	NA	NA	NA	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.01)	ND (0.001)	ND (0.0009)	ND (0.005)	ND (0.000057)	ND (0.001)	ND (0.000076)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Fluorene	97	--	--	7800	--	7	ND (0.01)	ND (0.001)	ND (0.0009)	NA	NA	ND (0.001)	ND (0.000095)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.01)	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.001)	ND (0.001)	ND (0.00095)	
Phenanthrene	73	--	--	5800	--	1	ND (0.01)	ND (0.001)	ND (0.0009)	ND (0.005)	ND (0.000038)	ND (0.001)	ND (0.000076)	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Pyrene	50	--	--	5800	--	3	ND (0.01)	ND (0.001)	ND (0.0009)	ND (0.005)	ND (0.000095)	ND (0.001)	ND (0.000095)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Table D2
Historical Groundwater Sampling Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-120	S-120	S-120	S-120	S-120	S-120	S-120
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration		S120-050305	S-120~11/29/2006	S-120~12/14/2007	S-120_110508	S-120~11/11/2010	S-120_20150518	S-120~11/18/2011
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW		5/3/2005	11/29/2006	12/14/2007	11/5/2008	11/11/2010	5/18/2015	11/18/2011
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Metals														
Arsenic	0.021	--	--	53	--	1.4		NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5		ND (0.001)	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4		NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5		NA	0.00016 J	0.0001 J	ND (0.000001)	ND (0.00005)	ND (0.000052)	ND (0.00008)
Manganese	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52		NA	NA	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100		NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-120	S-120	S-120	S-120	S-120	S-120	S-120
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-120~11/13/2009	S-120~4/2/2013	S-120_040213	S-120~JB67626	S-120_06_12_2013	S-120-20160518	S-120-20160812-WG	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	11/13/2009	4/2/2013	4/2/2013	5/21/2014	6/12/2013	5/18/2016	8/12/2016	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	NA	ND (0.001)	0.0078 (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.001)	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.001)	
Cumene	37	9100	63	30	4	2.6	ND (0.002)	NA	ND (0.002)	ND (0.001)	ND (0.002)	ND (0.002)	ND (0.001)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.001)	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00002)	NA	ND (0.00002)	ND (0.00002)	ND (0.000029)	ND (0.000029)	ND (0.00001)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.001)	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.001)	NA	ND (0.001)	0.0011 (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.002)	NA	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.002)	NA	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.001)	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	ND (0.00005)	
Anthracene	240	--	--	19000	--	40	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	ND (0.00005)	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.01)	
Chrysene	16	--	--	140000	--	1.3	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	ND (0.00005)	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.00005)	
Fluorene	97	--	--	7800	--	7	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	ND (0.00005)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.00025)	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.01)	
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.00139 (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00025)	
Phenanthrene	73	--	--	5800	--	1	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.01)	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.003)	
Pyrene	50	--	--	5800	--	3	ND (0.0001)	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.00005)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Table D2
Historical Groundwater Sampling Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-120	S-120	S-120	S-120	S-120	S-120	S-120
							S-120~11/13/2009 11/13/2009	S-120~4/2/2013 4/2/2013	S-120_040213 4/2/2013	S-120~JB67626 5/21/2014	S-120_06_12_2013 6/12/2013	S-120-20160518 5/18/2016	S-120-20160812-WG 8/12/2016
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	ND (0.002)
Lead	--	--	--	--	--	2.5	NA	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.001)	ND (0.001)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	NA	NA	NA	NA	0.00569 (0.002)
Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	NA	NA	NA	ND (0.005)
Zinc	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	0.0266 (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-120	S-120	S-121	S-121	S-121	S-121	S-123
							S-120-20161011-WG	20-20161011-WG-DUP	S-121 S-121	S121-050405	S-121_06_13_2013	S-121-20160815	S-123 S-123
							10/11/2016	10/11/2016 FD	10/20/2004	5/4/2005	6/13/2013	8/15/2016	10/20/2004
Physical Parameters													
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	0.15
sec-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	ND (0.001)	NA
tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	ND (0.001)	NA
Cumene	37	9100	63	30	4	2.6	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.002)	ND (0.001)	0.019
Cyclohexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	ND (0.001)	NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.00002)	ND (0.000028)	ND (0.00002)	ND (0.00001)	ND (0.00002)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.0037)
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	0.28
Hexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	ND (0.001)	NA
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.0044)
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.001)	ND (0.005)	0.26
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.001)	ND (0.001)	NA	NA	ND (0.002)	ND (0.001)	NA
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.001)	ND (0.001)	NA	NA	ND (0.002)	ND (0.001)	NA
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.003)	ND (0.003)	ND (0.01)	ND (0.005)	ND (0.001)	ND (0.003)	1.3
Semivolatile Organic Compounds													
Acenaphthene	57	--	--	3900	--	9	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA
Anthracene	240	--	--	19000	--	40	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.0001)	ND (0.00005)	NA
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	ND (0.01)	NA
Chrysene	16	--	--	140000	--	1.3	ND (0.00005)	ND (0.00005)	ND (0.00014)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00014)
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA
Fluoranthene	--	--	--	--	--	--	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA
Fluorene	97	--	--	7800	--	7	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.01)	ND (0.0001)	ND (0.00005)	0.013
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	ND (0.00005)	NA
2-Methylnaphthalene	--	--	--	--	--	--	ND (0.00025)	ND (0.00025)	NA	NA	NA	ND (0.00025)	NA
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	ND (0.01)	NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.00025)	ND (0.00025)	ND (0.005)	ND (0.01)	ND (0.0001)	ND (0.00025)	0.22
Phenanthrene	73	--	--	5800	--	1	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.01)	ND (0.0001)	ND (0.00005)	0.024
Phenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	ND (0.01)	NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	NA	NA	NA	ND (0.003)	NA
Pyrene	50	--	--	5800	--	3	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.01)
Perfluoroalkyl and Polyfluoroalkyl Substances													
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-120	S-120	S-121	S-121	S-121	S-121	S-123
							S-120-20161011-WG	20-20161011-WG-DUP	S-121 S-121	S121-050405	S-121_06_13_2013	S-121-20160815	S-123 S-123
							10/11/2016	10/11/2016 FD	10/20/2004	5/4/2005	6/13/2013	8/15/2016	10/20/2004
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	ND (0.001)	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	ND (0.002)	ND (0.002)	NA	NA	NA	ND (0.002)	NA
Lead	--	--	--	--	--	2.5	ND (0.002)	ND (0.002)	ND (0.005)	NA	ND (0.003)	ND (0.002)	ND (0.005)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	0.00563 B (0.002)	0.00506 B (0.002)	NA	NA	NA	0.00219 (0.002)	NA
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)	ND (0.005)	NA	NA	NA	ND (0.005)	NA
Zinc	--	--	--	--	--	--	ND (0.025)	ND (0.025)	NA	NA	NA	ND (0.025)	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-123	S-123	S-123	S-216	S-216	S-216	S-216
							S123-050405 5/4/2005	S-123-20160818-WG 8/18/2016	S-123-20161013-WG 10/13/2016	S216-042805 4/28/2005	S-216_06_12_2013 6/12/2013	S-216-20160816-WG 8/16/2016	S-216-20161012-WG 10/12/2016
Physical Parameters													
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Benzene	0.3	550	3.8	4	0.25	130	0.008 (0.005)	0.00486 (0.001)	0.00614 (0.001)	0.29 (0.01)	0.0237 (0.001)	0.0182 (0.001)	0.0194 (0.005)
sec-Butylbenzene	--	--	--	--	--	--	NA	ND (0.001)	ND (0.001)	NA	NA	0.00596 (0.001)	ND (0.005)
tert-Butylbenzene	--	--	--	--	--	--	NA	ND (0.001)	ND (0.001)	NA	NA	0.0021 (0.001)	ND (0.005)
Cumene	37	9100	63	30	4	2.6	0.01 (0.005)	ND (0.001)	0.00233 (0.001)	0.073 (0.01)	0.0262 (0.002)	0.0288 (0.001)	0.0223 (0.005)
Cyclohexane	--	--	--	--	--	--	NA	0.0118 (0.001)	0.04 (0.001)	NA	NA	0.0251 (0.001)	0.0181 (0.005)
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000028)	ND (0.00001)	ND (0.00001)	ND (0.000029)	ND (0.00002)	ND (0.00001)	ND (0.00001)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.01)	ND (0.001)	ND (0.001)	ND (0.005)
Ethyl Benzene	2	22000	150	40	9.7	13	0.068 (0.005)	0.0107 (0.001)	0.049 (0.001)	0.11 (0.01)	0.00085 J (0.001)	0.00105 (0.001)	ND (0.005)
Hexane	--	--	--	--	--	--	NA	0.00472 (0.001)	0.00929 (0.001)	NA	NA	ND (0.001)	ND (0.005)
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)	ND (0.001)	ND (0.001)	0.21 (0.01)	0.0006 J (0.001)	0.00417 (0.001)	ND (0.005)
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	0.19 (0.005)	0.0208 (0.005)	0.0955 (0.005)	0.048 (0.01)	0.0046 (0.001)	0.00611 (0.005)	ND (0.025)
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	0.0125 (0.001)	0.032 (0.001)	NA	0.00034 J (0.002)	ND (0.001)	0.0125 (0.005)
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	0.00222 (0.001)	0.00318 (0.001)	NA	ND (0.002)	ND (0.001)	ND (0.005)
Xylenes (total)	3.7	1900	13	17	0.86	210	0.25 (0.005)	0.0434 (0.003)	0.134 (0.003)	0.24 (0.01)	0.0037 (0.001)	0.00522 (0.003)	ND (0.015)
Semivolatile Organic Compounds													
Acenaphthene	57	--	--	3900	--	9	NA	0.00243 (0.00005)	0.000908 (0.00005)	NA	NA	0.00177 (0.00005)	0.00158 J- (0.00005)
Anthracene	240	--	--	19000	--	40	NA	0.00131 (0.00005)	0.00034 (0.00005)	NA	0.000246 (0.0001)	ND (0.00005)	ND,J (0.00005)
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	ND (0.00005)	ND,J (0.00005)
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	ND (0.00005)	ND,J (0.00005)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	ND (0.00005)	ND,J (0.00005)
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)	ND (0.00005)	ND,J (0.00005)
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	ND,J (0.00005)
1,1-Biphenyl	--	--	--	--	--	--	NA	ND (0.01)	ND (0.01)	NA	NA	ND (0.01)	ND (0.01)
Chrysene	16	--	--	140000	--	1.3	ND (0.01)	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND,J (0.00005)
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	ND,OE (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	ND,J (0.00005)
Fluoranthene	--	--	--	--	--	--	NA	0.00017 (0.00005)	ND (0.00005)	NA	NA	0.0000961 (0.00005)	0.0000701 J- (0.00005)
Fluorene	97	--	--	7800	--	7	0.013 (0.01)	0.00251 (0.00005)	0.00122 (0.00005)	0.06 (0.01)	0.00347 (0.0001)	0.00296 (0.00005)	0.00268 J- (0.00005)
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	ND,OE (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	ND,J (0.00005)
2-Methylnaphthalene	--	--	--	--	--	--	NA	0.00304 (0.00025)	0.000802 (0.00025)	NA	NA	ND (0.00025)	0.0114 J- (0.00025)
3&4-Methylphenol	--	--	--	--	--	--	NA	ND (0.01)	ND (0.01)	NA	NA	ND (0.01)	ND (0.01)
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.026 (0.01)	0.00241 (0.00025)	0.00423 (0.00025)	0.15 (0.05)	ND (0.0001)	0.00136 (0.00025)	0.00648 J- (0.00025)
Phenanthrene	73	--	--	5800	--	1	0.034 (0.01)	0.00517 (0.00005)	0.00185 (0.00005)	0.087 (0.01)	0.00271 (0.0001)	0.00361 (0.00005)	0.00353 J- (0.00005)
Phenol	--	--	--	--	--	--	NA	ND (0.01)	ND (0.01)	NA	NA	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	ND (0.003)	ND (0.003)	NA	NA	0.03 (0.003)	0.00523 (0.003)
Pyrene	50	--	--	5800	--	3	ND (0.01)	0.00116 (0.00005)	0.000279 (0.00005)	ND (0.01)	ND (0.0001)	0.00017 (0.00005)	0.000122 J- (0.00005)
Perfluoroalkyl and Polyfluoroalkyl Substances													
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-123	S-123	S-123	S-216	S-216	S-216	S-216
							S123-050405 5/4/2005	S-123-20160818-WG 8/18/2016	S-123-20161013-WG 10/13/2016	S216-042805 4/28/2005	S-216_06_12_2013 6/12/2013	S-216-20160816-WG 8/16/2016	S-216-20161012-WG 10/12/2016
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	ND (0.001)	NA	NA	ND (0.001)	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	0.00599 (0.002)	0.00297 (0.002)	NA	NA	0.0116 (0.002)	0.00545 (0.002)
Lead	--	--	--	--	--	2.5	NA	ND (0.002)	ND (0.002)	NA	ND (0.003)	ND (0.002)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	ND (0.002)	ND (0.002)	NA	NA	0.0426 (0.002)	0.00563 (0.002)
Vanadium	0.14	--	--	6.9	--	100	NA	ND (0.005)	ND (0.005)	NA	NA	ND (0.005)	ND (0.005)
Zinc	--	--	--	--	--	--	NA	ND (0.025)	ND (0.025)	NA	NA	ND (0.025)	ND (0.025)

Notes:

- All concentrations reported in mg/L; detection limits in parentheses.
- Only compounds with at least one detection are shown.
- MS, OE, and SL are unknown qualifiers.
- Boldfaced concentrations exceed the Nonpotable GW Use.
- No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- No concentrations exceed the Routine Worker GW VI.
- Underlined concentrations exceed the Construction Worker GW Direct Contact.
- Italicized concentrations exceed the Off-Site Resident GW VI.
- Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-218	S-218	S-218	S-218	S-218	S-218D	S-218D
							S218-042805 4/28/2005	S-218_06_14_2013 6/14/2013	S-218-20160817-WG 8/17/2016	S-218-20160817-WG-DUP 8/17/2016 FD	S-218-20161012-WG 10/12/2016	S-218D-20160426 4/26/2016	S-218D-20160830-WG 8/30/2016
Physical Parameters													
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Benzene	0.3	550	3.8	4	0.25	130	2.2 (0.05)	0.682 (0.005)	0.638 (0.01)	0.636 (0.005)	0.498 (0.01)	ND (0.001)	ND (0.001)
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.01)	0.00689 (0.005)	ND (0.01)	ND (0.005)	ND (0.001)
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.005)	ND (0.01)	ND (0.005)	ND (0.001)
Cumene	37	9100	63	30	4	2.6	ND (0.05)	0.0157 (0.01)	0.0221 (0.01)	0.0216 (0.005)	0.0138 (0.01)	ND (0.005)	ND (0.001)
Cyclohexane	--	--	--	--	--	--	NA	NA	0.118 (0.01)	0.113 (0.005)	0.074 (0.01)	ND (0.005)	ND (0.001)
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	0.000052 (0.000029)	ND (0.00002)	ND (0.00001)	ND (0.00001)	ND (0.00001)	ND (0.000028)	ND (0.00001)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.05)	ND (0.005)	ND (0.01)	ND (0.005)	ND (0.01)	ND (0.001)	ND (0.001)
Ethyl Benzene	2	22000	150	40	9.7	13	1.3 (0.05)	0.0415 (0.005)	0.103 (0.01)	0.0958 (0.005)	0.0487 (0.01)	ND (0.001)	ND (0.001)
Hexane	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.005)	0.0386 (0.01)	ND (0.005)	ND (0.001)
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.05)	0.0183 (0.005)	ND (0.01)	ND (0.005)	ND (0.01)	0.065 (0.001)	0.0925 (0.001)
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	0.36 (0.05)	0.0242 (0.005)	0.0623 (0.05)	0.0612 (0.025)	ND (0.05)	0.006 (0.001)	ND (0.005)
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	0.0891 (0.01)	0.119 (0.01)	0.112 (0.005)	0.0286 (0.01)	ND (0.005)	ND (0.001)
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	0.117 (0.01)	0.106 (0.01)	0.0986 (0.005)	0.0546 (0.01)	ND (0.005)	ND (0.001)
Xylenes (total)	3.7	1900	13	17	0.86	210	2.4 (0.05)	0.267 (0.005)	0.307 (0.03)	0.286 (0.015)	0.132 (0.03)	ND (0.001)	ND (0.003)
Semivolatile Organic Compounds													
Acenaphthene	57	--	--	3900	--	9	NA	NA	0.000661 (0.00005)	0.00064 (0.00005)	0.000768 (0.00005)	ND (0.0005)	ND (0.00005)
Anthracene	240	--	--	19000	--	40	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.001)	ND (0.01)
Chrysene	16	--	--	140000	--	1.3	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
Fluoranthene	--	--	--	--	--	--	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
Fluorene	97	--	--	7800	--	7	ND (0.01)	0.000424 (0.0001)	0.000814 (0.00005)	0.00071 (0.00005)	0.000917 (0.00005)	ND (0.0005)	ND (0.00005)
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	0.0524 (0.00025)	0.041 (0.00025)	0.044 (0.00025)	ND (0.0005)	ND (0.00025)
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.001)	ND (0.01)
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.25 (0.051)	0.0827 (0.001)	0.0854 (0.00025)	0.0495 (0.00025)	0.0206 (0.00025)	ND (0.0005)	ND (0.00025)
Phenanthrene	73	--	--	5800	--	1	ND (0.01)	0.000386 (0.0001)	0.000723 (0.00005)	0.00063 (0.00005)	0.000817 (0.00005)	ND (0.0005)	ND (0.00005)
Phenol	--	--	--	--	--	--	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.001)	ND (0.01)
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.005)	ND (0.003)
Pyrene	50	--	--	5800	--	3	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.0005)	ND (0.00005)
Perfluoroalkyl and Polyfluoroalkyl Substances													
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-218	S-218	S-218	S-218	S-218	S-218D	S-218D
							S218-042805 4/28/2005	S-218_06_14_2013 6/14/2013	S-218-20160817-WG 8/17/2016	S-218-20160817-WG-DUP 8/17/2016 FD	S-218-20161012-WG 10/12/2016	S-218D-20160426 4/26/2016	S-218D-20160830-WG 8/30/2016
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	ND (0.001)	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	0.0147 (0.002)	0.0165 (0.002)	0.0252 (0.002)	0.0168 (0.005)	0.0193 (0.002)
Lead	--	--	--	--	--	2.5	NA	ND (0.003)	ND (0.002)	ND (0.002)	ND (0.002)	0.0127 J (0.015)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	0.00329 (0.002)	0.00341 (0.002)	0.00492 (0.002)	0.0073 J (0.01)	0.00844 (0.002)
Vanadium	0.14	--	--	6.9	--	100	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
Zinc	--	--	--	--	--	--	NA	NA	ND (0.025)	ND (0.025)	ND (0.025)	0.106 (0.02)	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Collection Depth (ft bgs)	Sample Date	Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-218D S-218D-20160831-WG 8/31/2016	S-218D S-218D-20161011-WG 10/11/2016	S-218D 18D-HS-20161011-WG 10/11/2016	S-218D S-218D_20180628 6/28/2018	S-218D S-218D-HS_20180628 6/28/2018	S-218D S-218D_20190626 6/26/2019	S-218D S-218D_20191029 10/29/2019
Physical Parameters																	
	pH [SU]	--	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds																	
	Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	ND (0.001)	ND (0.001)
	sec-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	NA	NA
	tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	NA	NA
	Cumene	37	9100	63	30	4	2.6	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	ND (0.005)	ND (0.005)
	Cyclohexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	NA	NA
	1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.00001)	NA	NA	ND (0.00001)	NA	NA	ND (0.000028)	ND (0.000028)
	1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	ND (0.005)	ND (0.005)
	Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	ND (0.001)	ND (0.001)
	Hexane	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	NA	NA
	2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Methyl tert-butyl ether	21	29000	210	190	42	11000	0.0537 (0.001)	0.0553 (0.001)	0.0511 (0.001)	0.0486 (0.001)	0.0506 (0.001)	0.041 (0.001)	0.037 (0.001)	0.041 (0.001)	0.037 (0.001)	0.037 (0.001)
	tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	ND,OE (0.005)	ND,OE (0.005)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.025)
	Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.005)	ND (0.005)	NA	NA	ND (0.001)	NA	NA	ND (0.001)	ND (0.001)
	1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	ND (0.005)	ND (0.005)
	1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA	ND (0.001)	NA	NA	ND (0.005)	ND (0.005)
	Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.003)	ND (0.003)	ND (0.003)	NA	NA	ND (0.003)	NA	NA	ND (0.005)	ND (0.003)
Semivolatile Organic Compounds																	
	Acenaphthene	57	--	--	3900	--	9	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	NA	NA
	Anthracene	240	--	--	19000	--	40	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	ND (0.00005)	ND (0.00005)
	Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	ND (0.00005)	ND (0.00005)
	Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	ND (0.00005)	ND (0.00005)
	Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	ND (0.00005)	ND (0.00005)
	Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	ND (0.00005)	ND (0.00005)
	Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	NA	NA
	1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND (0.01)	ND (0.01)	NA	NA	ND (0.01)	NA	NA	NA	NA
	Chrysene	16	--	--	140000	--	1.3	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	ND (0.00005)	ND (0.00005)
	Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	NA	NA
	Fluoranthene	--	--	--	--	--	--	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	NA	NA
	Fluorene	97	--	--	7800	--	7	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	ND (0.00005)	ND (0.00005)
	Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	NA	NA
	2-Methylnaphthalene	--	--	--	--	--	--	0.000302 (0.00025)	ND (0.00025)	ND (0.00025)	NA	NA	ND (0.00025)	NA	NA	NA	NA
	3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	ND (0.01)	NA	NA	ND (0.01)	NA	NA	NA	NA
	Naphthalene	0.39	120	0.88	0.28	0.067	43	0.000529 (0.00025)	ND (0.00025)	ND (0.00025)	NA	NA	ND (0.00025)	NA	NA	ND (0.00005)	ND (0.00005)
	Phenanthrene	73	--	--	5800	--	1	0.000192 (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	ND (0.00005)	ND (0.00005)
	Phenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	ND (0.01)	NA	NA	ND (0.01)	NA	NA	NA	NA
	bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	ND (0.003)	NA	NA	ND (0.003)	NA	NA	NA	NA
	Pyrene	50	--	--	5800	--	3	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00005)	NA	NA	ND (0.00005)	ND (0.00005)
Perfluoroalkyl and Polyfluoroalkyl Substances																	
	Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-218D	S-218D	S-218D	S-218D	S-218D	S-218D	S-218D
							S-218D-20160831-WG 8/31/2016	S-218D-20161011-WG 10/11/2016	18D-HS-20161011-WG 10/11/2016	S-218D_20180628 6/28/2018	S-218D-HS_20180628 6/28/2018	S-218D_20190626 6/26/2019	S-218D_20191029 10/29/2019
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	0.0161 (0.002)	0.00407 (0.002)	0.00392 (0.002)	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	ND (0.002)	ND (0.002)	ND (0.002)	NA	NA	ND (0.003)	ND (0.0005)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	0.00445 (0.002)	ND (0.002)	0.00213 (0.002)	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)	ND (0.005)	ND (0.005)	NA	NA	NA	NA
Zinc	--	--	--	--	--	--	ND (0.025)	ND (0.025)	ND (0.025)	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Collection Depth (ft bgs)	Sample Date	Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-218D S-218D_20210430 23.75 4/30/2021	S-219 S219-042805 4/28/2005	S-219 S-219_06_12_2013 6/12/2013	S-219 S-219-20160815 8/15/2016	S-219 S-219-20161011-WG 10/11/2016	S-225 S225-042805 4/28/2005	S-225 S-225_06_12_2013 6/12/2013
Physical Parameters																	
	pH [SU]	--	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds																	
	Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	0.023 (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.024 (0.005)	0.0044 (0.001)
	sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA
	tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA
	Cumene	37	9100	63	30	4	2.6	ND (0.005)	ND (0.005)	ND (0.002)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.087 (0.005)	0.05 (0.002)
	Cyclohexane	--	--	--	--	--	--	NA	NA	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA
	1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.000029)	ND (0.00002)	ND (0.00001)	ND (0.00001)	ND (0.00001)	ND (0.00001)	ND (0.00001)	ND (0.000029)	ND (0.00002)
	1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)
	Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	0.0009 J (0.001)
	Hexane	--	--	--	--	--	--	NA	NA	NA	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	NA	NA
	2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Methyl tert-butyl ether	21	29000	210	190	42	11000	0.036 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)
	tert Butyl alcohol	--	--	--	--	--	--	ND (0.05)	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Toluene	25	100000	700	200	45	52	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	0.01 (0.005)	0.0029 (0.001)
	1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.005)	NA	ND (0.002)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	NA	0.00038 J (0.002)
	1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.005)	NA	ND (0.002)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	NA	ND (0.002)
	Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.006)	0.006 (0.005)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	0.011 (0.005)	0.0027 (0.001)
Semivolatile Organic Compounds																	
	Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA
	Anthracene	240	--	--	19000	--	40	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	0.000436 (0.0001)
	Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	0.000153 (0.0001)
	Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)
	Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)
	Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00054)	NA	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	ND (0.0001)
	Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA
	1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	NA	NA
	Chrysene	16	--	--	140000	--	1.3	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.01)	0.000208 (0.0001)
	Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA
	Fluoranthene	--	--	--	--	--	--	NA	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA
	Fluorene	97	--	--	7800	--	7	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	0.056 (0.01)	0.00274 (0.0001)
	Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	NA	NA
	2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	NA	NA
	3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	NA	NA
	Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.01)	ND (0.0001)
	Phenanthrene	73	--	--	5800	--	1	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	0.071 (0.01)	0.00202 (0.0001)
	Phenol	--	--	--	--	--	--	NA	NA	NA	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	NA	NA
	bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	NA	NA
	Pyrene	50	--	--	5800	--	3	ND (0.00054)	ND (0.01)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.01)	0.000407 (0.0001)
Perfluoroalkyl and Polyfluoroalkyl Substances																	
	Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-218D S-218D_20210430 23.75 4/30/2021	S-219 S219-042805 4/28/2005	S-219 S-219_06_12_2013 6/12/2013	S-219 S-219-20160815 8/15/2016	S-219 S-219-20161011-WG 10/11/2016	S-225 S225-042805 4/28/2005	S-225 S-225_06_12_2013 6/12/2013
Metals														
	Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
	Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Lead	--	--	--	--	--	2.5	NA	ND (0.001)	NA	NA	NA	ND (0.001)	NA
	Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
	Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Cobalt	--	--	--	--	--	--	NA	NA	NA	0.00331 B (0.002)	0.00217 (0.002)	NA	NA
	Lead	--	--	--	--	--	2.5	ND (0.00052)	NA	ND (0.003)	ND (0.002)	ND (0.002)	NA	ND (0.003)
	Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Nickel	1.3	--	--	86	--	52	NA	NA	NA	0.00395 B (0.002)	ND (0.002)	NA	NA
	Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	ND (0.005)	ND (0.005)	NA	NA
	Zinc	--	--	--	--	--	--	NA	NA	NA	ND (0.025)	ND (0.025)	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-225	S-225	S-229	S-34	S-35	S-35	S-35
							S-225-20160815 8/15/2016	S-225-20161011-WG 10/11/2016	S229-042805 4/28/2005	S-34_06_14_2013 6/14/2013	S-35-20160818-WG 8/18/2016	S-35-20161012-WG 10/12/2016	S-35-20161012-WG-DUP 10/12/2016 FD
Physical Parameters													
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Benzene	0.3	550	3.8	4	0.25	130	ND (0.01)	0.0058 (0.001)	1.9 (0.05)	NA	ND (0.005)	ND (0.001)	ND (0.001)
sec-Butylbenzene	--	--	--	--	--	--	0.0127 (0.01)	0.00962 (0.001)	NA	NA	ND (0.005)	ND (0.001)	ND (0.001)
tert-Butylbenzene	--	--	--	--	--	--	ND (0.01)	0.00242 (0.001)	NA	NA	ND (0.005)	ND (0.001)	ND (0.001)
Cumene	37	9100	63	30	4	2.6	0.0682 (0.01)	0.0487 (0.001)	0.15 (0.05)	NA	ND (0.005)	ND (0.001)	ND (0.001)
Cyclohexane	--	--	--	--	--	--	0.105 (0.01)	0.0289 (0.001)	NA	NA	ND (0.005)	ND (0.001)	ND (0.001)
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	0.000033 (0.000029)	NA	ND (0.00001)	ND (0.00001)	ND (0.00001)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.01)	ND (0.001)	ND (0.05)	NA	ND (0.005)	ND (0.001)	ND (0.001)
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.01)	ND (0.001)	0.35 (0.05)	NA	ND (0.005)	ND (0.001)	ND (0.001)
Hexane	--	--	--	--	--	--	ND (0.01)	ND (0.001)	NA	NA	ND (0.005)	ND (0.001)	ND (0.001)
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.01)	ND (0.001)	ND (0.05)	NA	ND (0.005)	ND (0.001)	ND (0.001)
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	ND (0.05)	ND (0.005)	ND (0.05)	NA	ND (0.025)	ND (0.005)	ND (0.005)
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.01)	ND (0.001)	NA	NA	ND (0.005)	ND (0.001)	ND (0.001)
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.01)	ND (0.001)	NA	NA	ND (0.005)	ND (0.001)	ND (0.001)
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.03)	ND (0.003)	0.63 (0.05)	NA	ND (0.015)	ND (0.003)	ND (0.003)
Semivolatile Organic Compounds													
Acenaphthene	57	--	--	3900	--	9	0.00146 (0.00005)	0.00104 (0.00005)	NA	NA	0.0424 (0.00267)	ND (0.00005)	0.000731 (0.00005)
Anthracene	240	--	--	19000	--	40	0.000279 (0.00005)	0.000217 (0.00005)	NA	NA	ND (0.00267)	ND (0.00005)	ND (0.00005)
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	0.0000828 (0.00005)	ND (0.00005)	NA	NA	ND (0.00267)	ND (0.00005)	0.0000527 (0.00005)
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00267)	ND (0.00005)	0.0000684 (0.00005)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00267)	ND (0.00005)	ND (0.00005)
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00267)	ND (0.00005)	ND (0.00005)
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)	ND (0.00005)	NA	NA	ND (0.00267)	ND (0.00005)	ND (0.00005)
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	ND (0.2)	ND (0.4)	ND (0.2)
Chrysene	16	--	--	140000	--	1.3	0.0000713 (0.00005)	ND (0.00005)	ND (0.01)	NA	ND (0.00267)	ND (0.00005)	0.000244 (0.00005)
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	ND,OE (0.00267)	ND (0.00005)	ND (0.00005)
Fluoranthene	--	--	--	--	--	--	0.000269 (0.00005)	0.000109 (0.00005)	NA	NA	0.00413 (0.00267)	ND (0.00005)	0.000123 (0.00005)
Fluorene	97	--	--	7800	--	7	0.00249 (0.00005)	0.00208 (0.00005)	0.011 (0.01)	NA	ND (0.00267)	ND (0.00005)	ND (0.00005)
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	ND,OE (0.00267)	ND (0.00005)	ND (0.00005)
2-Methylnaphthalene	--	--	--	--	--	--	ND (0.00025)	ND (0.00025)	NA	NA	ND (0.0133)	ND (0.00025)	ND (0.00025)
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	ND (0.2)	ND (0.4)	ND (0.2)
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.00025)	0.000999 (0.00025)	0.22 (0.051)	NA	ND (0.0133)	ND (0.00025)	0.000627 B (0.00025)
Phenanthrene	73	--	--	5800	--	1	0.000591 (0.00005)	0.00161 (0.00005)	0.015 (0.01)	NA	0.11 (0.00267)	ND (0.00005)	ND (0.00005)
Phenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	ND (0.2)	ND (0.4)	ND (0.2)
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	NA	NA	ND (0.06)	0.188 (0.12)	ND (0.06)
Pyrene	50	--	--	5800	--	3	0.000323 (0.00005)	0.000102 (0.00005)	ND (0.01)	NA	0.0716 (0.00267)	0.00032 J (0.00005)	0.00178 J (0.00005)
Perfluoroalkyl and Polyfluoroalkyl Substances													
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-225	S-225	S-229	S-34	S-35	S-35	S-35
							S-225-20160815	S-225-20161011-WG	S229-042805	S-34_06_14_2013	S-35-20160818-WG	S-35-20161012-WG	35-20161012-WG-DUP
							8/15/2016	10/11/2016	4/28/2005	6/14/2013	8/18/2016	10/12/2016	10/12/2016
													FD
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	ND (0.001)	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	ND (0.002)	ND (0.002)	NA	NA	ND (0.002)	ND (0.002)	ND (0.002)
Lead	--	--	--	--	--	2.5	ND (0.002)	ND (0.002)	NA	0.0034 (0.003)	ND (0.002)	ND (0.002)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	ND (0.002)	ND (0.002)	NA	NA	ND (0.002)	ND (0.002)	ND (0.002)
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)	ND (0.005)	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)
Zinc	--	--	--	--	--	--	ND (0.025)	ND (0.025)	NA	NA	ND (0.025)	ND (0.025)	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-36	S-364	S-365	S-365	S-366	S-366	S-366	
							S-36_06_14_2013 6/14/2013	S-364_06_12_2013 6/12/2013	S-365-20160818-WG 8/18/2016	S-365-20161012-WG 10/12/2016	S-366_06_12_2013 6/12/2013	S-366-20160816-WG 8/16/2016	S-366-20161011-WG 10/11/2016	
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.288 (0.005)	0.0098 (0.001)	0.00704 SL (0.005)	0.0645 SL (0.05)	0.232 (0.005)	0.00651 (0.001)	0.00762 (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	ND,SL (0.005)	ND,SL (0.05)	NA	0.00992 (0.001)	0.00696 (0.001)	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	ND,SL (0.005)	ND,SL (0.05)	NA	0.00269 (0.001)	0.00209 (0.001)	
Cumene	37	9100	63	30	4	2.6	0.0418 (0.002)	0.0577 (0.002)	0.0109 SL (0.005)	0.0674 SL (0.05)	0.0529 (0.002)	0.0496 (0.001)	0.0459 (0.001)	
Cyclohexane	--	--	--	--	--	--	NA	NA	0.293 SL (0.005)	0.712 SL (0.05)	NA	0.21 (0.01)	0.141 (0.001)	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00002)	ND (0.00002)	ND,SL (0.00001)	ND,SL (0.00001)	ND (0.00002)	ND (0.00001)	ND (0.00001)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND,SL (0.005)	ND,SL (0.05)	ND (0.001)	ND (0.001)	ND (0.001)	
Ethyl Benzene	2	22000	150	40	9.7	13	0.0369 (0.001)	0.0408 (0.001)	ND,SL (0.005)	ND,SL (0.05)	0.13 (0.001)	0.00381 (0.001)	ND (0.001)	
Hexane	--	--	--	--	--	--	NA	NA	ND,SL (0.005)	0.0527 SL (0.05)	NA	0.00108 (0.001)	ND (0.001)	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	0.0219 (0.001)	0.00054 J (0.001)	ND,SL (0.005)	ND,SL (0.05)	0.00046 J (0.001)	ND (0.001)	ND (0.001)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	0.071 (0.001)	0.0027 (0.001)	ND,SL (0.025)	ND,SL (0.25)	0.0037 (0.001)	ND (0.005)	ND (0.005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	0.003 (0.002)	0.0148 (0.002)	ND,SL (0.005)	ND,SL (0.05)	0.148 (0.002)	0.0351 (0.001)	0.0137 (0.001)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	0.0555 (0.002)	0.0135 (0.002)	0.0125 SL (0.005)	ND,SL (0.05)	0.0451 (0.002)	0.0229 (0.001)	0.0134 (0.001)	
Xylenes (total)	3.7	1900	13	17	0.86	210	0.121 (0.001)	0.0167 (0.001)	ND,SL (0.015)	ND,SL (0.15)	0.335 (0.001)	0.0103 (0.003)	0.00317 (0.003)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	0.00211 SL (0.00005)	0.00468 SL (0.000057)	NA	0.00184 (0.00005)	0.000843 (0.00005)	
Anthracene	240	--	--	19000	--	40	ND (0.0001)	0.000278 (0.0001)	0.000963 SL (0.00005)	0.00243 SL (0.000057)	0.000605 (0.0001)	0.000385 (0.00005)	0.000177 (0.00005)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	0.000515 SL (0.00005)	0.000916 SL (0.000057)	0.000327 (0.0001)	0.000111 (0.00005)	ND (0.00005)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.0001)	ND (0.0001)	0.000244 SL (0.00005)	0.000421 SL (0.000057)	ND (0.0001)	0.0000559 (0.00005)	ND (0.00005)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	0.000244 SL (0.00005)	0.000351 SL (0.000057)	ND (0.0001)	0.0000637 (0.00005)	ND (0.00005)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.0001)	ND (0.0001)	0.000129 SL (0.00005)	0.000194 SL (0.000057)	ND (0.0001)	ND (0.00005)	ND (0.00005)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	0.0000639 SL (0.00005)	0.000123 SL (0.000057)	NA	ND (0.00005)	ND (0.00005)	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	ND,SL (0.05)	ND,SL (0.05)	NA	ND (0.01)	ND (0.01)	
Chrysene	16	--	--	140000	--	1.3	ND (0.0001)	ND (0.0001)	0.000497 SL (0.00005)	0.000856 SL (0.000057)	0.000429 (0.0001)	0.0000864 (0.00005)	ND (0.00005)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	0.00611 OE,SL (0.00005)	0.000979 SL (0.000057)	NA	ND (0.00005)	ND (0.00005)	
Fluoranthene	--	--	--	--	--	--	NA	NA	0.00106 SL (0.00005)	0.0021 SL (0.000057)	NA	0.000396 (0.00005)	0.0000766 (0.00005)	
Fluorene	97	--	--	7800	--	7	0.0115 (0.001)	0.00121 (0.0001)	0.00239 SL (0.00005)	0.00607 SL (0.000057)	0.00324 (0.0001)	0.00293 (0.00005)	0.00141 (0.00005)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	0.00626 OE,SL (0.00005)	0.0001 SL (0.000057)	NA	ND (0.00005)	ND (0.00005)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	0.00206 SL (0.00025)	0.0734 SL (0.00573)	NA	0.0218 (0.00025)	0.00765 (0.00025)	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	ND,SL (0.05)	ND,SL (0.05)	NA	ND (0.01)	ND (0.01)	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.0001)	0.0199 (0.001)	0.00443 SL (0.00025)	0.0235 SL (0.00573)	NA	0.00754 (0.00025)	0.00135 (0.00025)	
Phenanthrene	73	--	--	5800	--	1	0.0165 (0.001)	0.00129 (0.0001)	0.00273 SL (0.00005)	0.0125 SL (0.000057)	0.00261 (0.0001)	0.00323 (0.00005)	0.000981 (0.00005)	
Phenol	--	--	--	--	--	--	NA	NA	ND,SL (0.05)	ND,SL (0.05)	NA	ND (0.01)	ND (0.01)	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	ND,SL (0.015)	ND,SL (0.015)	NA	ND (0.003)	ND (0.003)	
Pyrene	50	--	--	5800	--	3	0.000802 (0.0001)	0.00021 (0.0001)	0.00224 SL (0.00005)	0.0031 SL (0.000057)	0.000711 (0.0001)	0.000504 (0.00005)	0.0000679 (0.00005)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-36	S-364	S-365	S-365	S-366	S-366	S-366
							S-36_06_14_2013	S-364_06_12_2013	S-365-20160818-WG	S-365-20161012-WG	S-366_06_12_2013	S-366-20160816-WG	S-366-20161011-WG
							6/14/2013	6/12/2013	8/18/2016	10/12/2016	6/12/2013	8/16/2016	10/11/2016
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	ND,SL (0.002)	ND,SL (0.002)	NA	0.0115 (0.002)	0.00414 (0.002)
Lead	--	--	--	--	--	2.5	NA	ND (0.003)	ND,SL (0.002)	ND,SL (0.002)	ND (0.003)	ND (0.002)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	0.0041 B,SL (0.002)	ND,SL (0.002)	NA	ND (0.002)	ND (0.002)
Vanadium	0.14	--	--	6.9	--	100	NA	NA	ND,SL (0.005)	ND,SL (0.005)	NA	ND (0.005)	ND (0.005)
Zinc	--	--	--	--	--	--	NA	NA	ND,SL (0.025)	ND,SL (0.025)	NA	ND (0.025)	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	S-366		S-367		S-367		S-367		S-373		S-379		S-381	
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-366_20220328	S-367_06_12_2013	S-367-20160815	S-367-20161011-WG	S-373-20161014-WG	S-379_06_12_2013	S-381_06_14_2013	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	22.0300006866455							
Sample Date		Vol to		Direct Contact	VI		3/28/2022	6/12/2013	8/15/2016	10/11/2016	10/14/2016	6/12/2013	6/14/2013	
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.005)	0.00083 J (0.001)	ND (0.001)	ND (0.001)	3.33 SL (0.2)	0.0199 (0.001)	0.296 (0.01)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.001)	0.00159 (0.001)	ND,SL (0.2)	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	0.00214 (0.001)	0.00221 (0.001)	ND,SL (0.2)	NA	NA	
Cumene	37	9100	63	30	4	2.6	0.0368 (0.01)	0.0458 (0.002)	ND (0.001)	0.00475 (0.001)	ND,SL (0.2)	0.0034 (0.002)	0.0606 (0.02)	
Cyclohexane	--	--	--	--	--	--	NA	NA	ND (0.001)	ND (0.001)	ND,SL (0.2)	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00002)	ND (0.00002)	ND (0.00001)	ND (0.00001)	ND,SL (0.00001)	ND (0.00002)	ND (0.00002)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.01)	ND (0.001)	ND (0.001)	ND (0.001)	ND,SL (0.2)	ND (0.001)	ND (0.01)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.01)	0.0576 (0.001)	ND (0.001)	ND (0.001)	0.752 SL (0.2)	0.0015 (0.001)	0.554 (0.01)	
Hexane	--	--	--	--	--	--	NA	NA	ND (0.001)	ND (0.001)	ND,SL (0.2)	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.01)	0.00038 J (0.001)	ND (0.001)	ND (0.001)	ND,SL (0.2)	ND (0.001)	0.026 (0.01)	
tert Butyl alcohol	--	--	--	--	--	--	15.8 (0.5)	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.01)	0.00028 J (0.001)	ND (0.005)	ND (0.005)	ND,SL (1)	0.00054 J (0.001)	1.77 (0.01)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.02)	0.0539 (0.002)	ND (0.001)	ND (0.001)	1.01 SL (0.2)	0.00053 J (0.002)	1.13 (0.02)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.02)	0.0147 (0.002)	ND (0.001)	ND (0.001)	0.295 SL (0.2)	0.0039 (0.002)	0.374 (0.02)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.01)	0.0453 (0.001)	ND (0.003)	ND (0.003)	3.84 SL (0.6)	0.0013 (0.001)	3.6 (0.01)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	0.000651 (0.00005)	0.000579 (0.00005)	0.894 SL (0.025)	NA	NA	
Anthracene	240	--	--	19000	--	40	0.000403 (0.000074)	ND (0.0001)	0.000176 (0.00005)	0.0000819 (0.00005)	0.355 SL (0.025)	ND (0.0001)	0.000898 (0.0001)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	0.0000405 (0.000037)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND,SL (0.025)	ND (0.0001)	ND (0.0001)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	0.0000253 J (0.000037)	ND (0.0001)	ND (0.00005)	ND (0.00005)	0.000289 SL (0.00005)	ND (0.0001)	ND (0.0001)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	0.0000293 J (0.000037)	ND (0.0001)	ND (0.00005)	ND (0.00005)	0.000323 SL (0.00005)	ND (0.0001)	ND (0.0001)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.000074)	ND (0.0001)	ND (0.00005)	ND (0.00005)	0.000238 SL (0.00005)	ND (0.0001)	ND (0.0001)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	ND (0.00005)	ND (0.00005)	0.0000957 SL (0.00005)	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	ND (0.0111)	ND (0.01)	0.255 SL (0.05)	NA	NA	
Chrysene	16	--	--	140000	--	1.3	0.0000594 J (0.000074)	ND (0.0001)	ND (0.00005)	ND (0.00005)	ND,SL (0.025)	ND (0.0001)	ND (0.0001)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	ND (0.00005)	ND (0.00005)	ND,SL (0.00005)	NA	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	0.000101 (0.00005)	ND (0.00005)	ND,SL (0.025)	NA	NA	
Fluorene	97	--	--	7800	--	7	0.000542 (0.000074)	0.000873 (0.0001)	0.00153 (0.00005)	0.00146 (0.00005)	0.748 SL (0.025)	ND (0.0001)	0.00973 (0.002)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.00005)	ND (0.00005)	0.000144 SL (0.00005)	NA	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	ND (0.00025)	ND (0.00025)	8.37 SL (0.125)	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	ND (0.0111)	ND (0.01)	ND,SL (0.01)	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.000074)	0.00134 (0.0001)	ND (0.00025)	ND (0.00025)	2.41 SL (0.125)	ND (0.0001)	0.136 (0.002)	
Phenanthrene	73	--	--	5800	--	1	ND (0.000074)	ND (0.0001)	ND (0.00005)	ND (0.00005)	2.25 SL (0.025)	0.000199 (0.0001)	0.0137 (0.0002)	
Phenol	--	--	--	--	--	--	NA	NA	ND (0.0111)	ND (0.01)	0.0131 SL (0.01)	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	ND (0.00333)	ND (0.003)	0.0395 SL (0.003)	NA	NA	
Pyrene	50	--	--	5800	--	3	0.000154 (0.000074)	ND (0.0001)	0.000135 (0.00005)	ND (0.00005)	0.112 SL (0.025)	ND (0.0001)	0.000677 (0.0001)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-366	S-367	S-367	S-367	S-373	S-379	S-381
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration		S-366_20220328	S-367_06_12_2013	S-367-20160815	S-367-20161011-WG	S-373-20161014-WG	S-379_06_12_2013	S-381_06_14_2013
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	22.0300006866455							
Sample Date		Vol to		Direct Contact	VI		3/28/2022	6/12/2013	8/15/2016	10/11/2016	10/14/2016	6/12/2013	6/14/2013	
Comments		Outdoor Air												
Metals														
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	ND (0.002)	ND (0.002)	ND,SL (0.002)	NA	NA	NA
Lead	--	--	--	--	--	2.5	ND (0.001)	ND (0.003)	ND (0.002)	ND (0.002)	ND,SL (0.002)	ND (0.003)	ND (0.003)	ND (0.003)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	ND (0.002)	ND (0.002)	ND,SL (0.002)	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100	NA	NA	ND (0.005)	ND (0.005)	ND,SL (0.005)	NA	NA	NA
Zinc	--	--	--	--	--	--	NA	NA	ND (0.025)	ND (0.025)	23.2 SL (0.5)	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-381	S-381	S-39D	S-39D	S-39D	S-39D	S-39D	
							S-381-20160817-WG 8/17/2016	S-381-20161013-WG 10/13/2016	S-39D-20160426 4/26/2016	39D-HS-20160830-WG 8/30/2016	S-39D-20160831-WG 8/31/2016	S-39D-20161011-WG 10/11/2016	39D-HS-20161011-WG 10/11/2016	
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.0103 (0.001)	0.0194 (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
sec-Butylbenzene	--	--	--	--	--	--	0.00141 (0.001)	0.00243 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Cumene	37	9100	63	30	4	2.6	0.00415 (0.001)	0.00697 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Cyclohexane	--	--	--	--	--	--	0.0302 (0.001)	0.0455 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.000028)	ND (0.00001)	ND (0.00001)	ND (0.00001)	ND (0.00001)	ND (0.00001)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Ethyl Benzene	2	22000	150	40	9.7	13	0.0652 (0.001)	0.101 (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Hexane	--	--	--	--	--	--	0.0564 (0.001)	0.0563 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	ND (0.001)	0.07 (0.001)	0.0329 (0.001)	0.0638 (0.001)	0.0511 (0.001)	0.0175 (0.001)	0.0175 (0.001)
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	0.109 (0.005)	0.172 (0.005)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	0.088 (0.001)	0.15 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	0.0216 (0.001)	0.0408 (0.001)	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)
Xylenes (total)	3.7	1900	13	17	0.86	210	0.217 (0.003)	0.352 (0.003)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	0.000912 (0.0001)	0.00168 (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Anthracene	240	--	--	19000	--	40	0.000173 (0.0001)	0.000381 (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND,OE (0.01)	ND (0.001)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Chrysene	16	--	--	140000	--	1.3	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Fluoranthene	--	--	--	--	--	--	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Fluorene	97	--	--	7800	--	7	0.00125 (0.0001)	0.00245 (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
2-Methylnaphthalene	--	--	--	--	--	--	0.0136 (0.0005)	0.0283 (0.0005)	ND (0.0005)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND,OE (0.01)	ND (0.001)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.0215 (0.0005)	0.0335 (0.0005)	ND (0.0005)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
Phenanthrene	73	--	--	5800	--	1	0.00164 (0.0001)	0.00352 (0.0001)	ND (0.0005)	ND (0.00005)	0.000196 (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Phenol	--	--	--	--	--	--	ND (0.01)	ND,OE (0.01)	ND (0.001)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	ND (0.005)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)	ND (0.003)
Pyrene	50	--	--	5800	--	3	0.000129 (0.0001)	0.000382 (0.0001)	ND (0.0005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)	ND (0.00005)
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-381	S-381	S-39D	S-39D	S-39D	S-39D	S-39D
							S-381-20160817-WG 8/17/2016	S-381-20161013-WG 10/13/2016	S-39D-20160426 4/26/2016	39D-HS-20160830-WG 8/30/2016	S-39D-20160831-WG 8/31/2016	S-39D-20161011-WG 10/11/2016	39D-HS-20161011-WG 10/11/2016
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	ND (0.002)	0.00267 (0.002)	0.0046 J (0.005)	0.00561 (0.002)	0.00505 (0.002)	ND (0.002)	ND (0.002)
Lead	--	--	--	--	--	2.5	ND (0.002)	ND (0.002)	0.0079 J (0.015)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	ND (0.002)	ND (0.002)	0.0031 J (0.01)	0.00431 B (0.002)	0.00323 B (0.002)	0.00211 (0.002)	0.00358 (0.002)
Vanadium	0.14	--	--	6.9	--	100	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)	ND (0.005)
Zinc	--	--	--	--	--	--	ND (0.025)	ND (0.025)	0.0346 (0.02)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Collection Depth (ft bgs)	Sample Date	Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-39D S-39D_20180628 6/28/2018	S-39D S-39D-HS_20180628 6/28/2018	S-39D S-39D_20190620 6/20/2019	S-39D S-39D_20191029 10/29/2019	S-39D DUP-2_20191029 :0210507_410-39177-1 10/29/2019 FD	S-39D 23.8999996185303 5/7/2021	S-39D S-39D 7/21/2021
Physical Parameters																	
	pH [SU]	--	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	6.96
Volatile Organic Compounds																	
	Benzene	0.3	550	3.8	4	0.25	130	NA	NA	0.0002 J (0.001)	NA	NA	ND (0.001)	ND (0.001)	0.00069 J (0.001)	NA	
	sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Cumene	37	9100	63	30	4	2.6	NA	NA	ND (0.005)	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)	NA	
	Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	NA	NA	ND (0.000028)	NA	NA	ND (0.000028)	ND (0.000028)	ND (0.000029)	NA	
	1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	NA	NA	ND (0.005)	NA	NA	ND (0.005)	ND (0.005)	ND (0.001)	NA	
	Ethyl Benzene	2	22000	150	40	9.7	13	NA	NA	ND (0.001)	NA	NA	ND (0.001)	ND (0.001)	ND (0.001)	NA	
	Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Methyl tert-butyl ether	21	29000	210	190	42	11000	0.0551 (0.001)	0.0282 (0.001)	0.091 (0.001)	0.031 (0.001)	0.033 (0.001)	0.024 (0.001)	0.024 (0.001)	0.024 (0.001)	NA	
	tert Butyl alcohol	--	--	--	--	--	--	ND,OE (0.005)	ND,OE (0.005)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.025)	ND (0.05)	
	Toluene	25	100000	700	200	45	52	NA	NA	ND (0.001)	NA	NA	ND (0.001)	ND (0.001)	ND (0.001)	NA	
	1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	NA	ND (0.005)	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)	NA	
	1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	NA	ND (0.005)	NA	NA	ND (0.005)	ND (0.005)	ND (0.005)	NA	
	Xylenes (total)	3.7	1900	13	17	0.86	210	NA	NA	ND (0.005)	NA	NA	ND (0.003)	ND (0.003)	ND (0.006)	NA	
Semivolatile Organic Compounds																	
	Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Anthracene	240	--	--	19000	--	40	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
	Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
	Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
	Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
	Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
	Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Chrysene	16	--	--	140000	--	1.3	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
	Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Fluorene	97	--	--	7800	--	7	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
	Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Naphthalene	0.39	120	0.88	0.28	0.067	43	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
	Phenanthrene	73	--	--	5800	--	1	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
	Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	Pyrene	50	--	--	5800	--	3	NA	NA	ND (0.0005)	NA	NA	ND (0.0005)	ND (0.0005)	ND (0.00055)	NA	
Perfluoroalkyl and Polyfluoroalkyl Substances																	
	Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	0.00002 (0.00002)	

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Collection Depth (ft bgs)	Sample Date	Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-39D S-39D_20180628	S-39D S-39D-HS_20180628	S-39D S-39D_20190620	S-39D S-39D_20191029	S-39D DUP-2_20191029_0210507_410-39177-1	S-39D 23.89999996185303	S-39D S-39D
											6/28/2018	6/28/2018	6/20/2019	10/29/2019	10/29/2019	5/7/2021	7/21/2021
															FD		
Metals																	
	Arsenic				0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
	Cobalt				--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Lead				--	--	--	--	--	2.5	NA	NA	NA	NA	NA	NA	NA
	Manganese				--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Mercury				--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Arsenic				0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
	Barium				--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Chromium (total)				--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Cobalt				--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Lead				--	--	--	--	--	2.5	NA	NA	ND (0.003)	ND (0.0005)	ND (0.0005)	ND (0.00052)	NA
	Manganese				--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Nickel				1.3	--	--	86	--	52	NA	NA	NA	NA	NA	NA	NA
	Vanadium				0.14	--	--	6.9	--	100	NA	NA	NA	NA	NA	NA	NA
	Zinc				--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-39D 39D_20220405_42610 24.8199996948242 4/5/2022	S-40 S-40~1/1/1985 1/1/1985	S-40 S-40~1/1/1986 1/1/1986	S-40 S-40~1/1/1988 1/1/1988	S-40 S-40~1/1/1993 1/1/1993	S-40 S-40~1/1/1994 1/1/1994	S-40 S-40~12/28/1995 12/28/1995
Physical Parameters													
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Benzene	0.3	550	3.8	4	0.25	130	ND (0.0005)	2.8	0.6	2	0.078	0.28	0.15
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	37	9100	63	30	4	2.6	ND (0.001)	NA	NA	NA	NA	NA	NA
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00002)	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	NA	NA	NA	NA	NA	NA
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	1.2	0.21	2.9	0.012	0.14 J	0.029
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	0.0596 (0.001)	NA	NA	NA	NA	NA	NA
tert Butyl alcohol	--	--	--	--	--	--	ND (0.01)	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	ND (0.001)	ND	ND	ND	0.006	0.055 J	0.023
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.002)	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.002)	NA	NA	NA	NA	NA	NA
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.001)	6.1	1.52	4.1	0.016	0.075 J	0.0512
Semivolatile Organic Compounds													
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA
Anthracene	240	--	--	19000	--	40 0000442 JB (0.000082)	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.000041)	ND	ND	ND (0.01)	ND	ND (0.001)	0.001
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.000041)	ND	ND	ND (0.01)	ND	ND (0.001)	ND (0.001)
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.000041)	ND	ND	ND (0.01)	ND	ND (0.001)	0.001
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.000082)	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	16	--	--	140000	--	1.3	ND (0.000082)	ND	ND	ND	ND	ND (0.01)	ND
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	ND	ND	ND (0.01)	ND	ND (0.001)	ND (0.001)
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	97	--	--	7800	--	7	ND (0.000082)	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	ND	ND	ND	ND	ND (0.01)	ND
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.000082)	NA	NA	NA	NA	NA	NA
Phenanthrene	73	--	--	5800	--	1	ND (0.000082)	NA	NA	NA	NA	NA	NA
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	ND	ND	ND (0.01)	0.001 J	0.003	0.004
Pyrene	50	--	--	5800	--	3 J.0000513 J (0.000082)	NA	NA	NA	NA	NA	NA	NA
Perfluoroalkyl and Polyfluoroalkyl Substances													
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Collection Depth (ft bgs)	Sample Date	Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-39D 39D_20220405_42610 24.8199996948242 4/5/2022	S-40 S-40~1/1/1985 1/1/1985	S-40 S-40~1/1/1986 1/1/1986	S-40 S-40~1/1/1988 1/1/1988	S-40 S-40~1/1/1993 1/1/1993	S-40 S-40~1/1/1994 1/1/1994	S-40 S-40~12/28/1995 12/28/1995
Metals																	
	Arsenic		0.021		--	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
	Cobalt		--		--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Lead		--		--	--	--	--	--	2.5	NA	ND	0.19	ND (0.2)	0.0411	0.022	0.099
	Manganese		--		--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Mercury		--		--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Arsenic		0.021		--	--	--	53	--	1.4	NA	ND	0.0229	ND (0.005)	0.0113	0.021	0.025
	Barium		--		--	--	--	--	--	--	NA	0.15	NA	0.086	0.163	0.16	0.25
	Chromium (total)		--		--	--	--	--	--	--	NA	ND	NA	ND (0.02)	0.03	ND (0.02)	0.11
	Cobalt		--		--	--	--	--	--	--	NA	ND	ND	ND (0.02)	ND	ND (0.02)	ND (0.05)
	Lead		--		--	--	--	--	--	2.5	ND (0.001)	NA	NA	NA	NA	NA	NA
	Manganese		--		--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Nickel		1.3		--	--	--	86	--	52	NA	NA	NA	NA	NA	NA	NA
	Vanadium		0.14		--	--	--	6.9	--	100	NA	NA	NA	NA	NA	NA	NA
	Zinc		--		--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-40	S-40	S-40	S-40	S-40	S-40	S-40
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-40~1/1/1996	S-40~11/19/1997	S-40~11/12/1998	S-40~12/2/1999	S-40~11/16/2000	S-40~11/14/2001	S-40~11/12/2002	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	1/1/1996	11/19/1997	11/12/1998	12/2/1999	11/16/2000	11/14/2001	11/12/2002	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.012	0.35	0.63	1	0.6	1.2	0.24	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Cumene	37	9100	63	30	4	2.6	NA	NA	NA	NA	NA	NA	NA	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	NA	NA	NA	NA	NA	NA	NA	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	NA	NA	NA	NA	NA	NA	NA	
Ethyl Benzene	2	22000	150	40	9.7	13	0.0034	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	0.068	0.007	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	NA	NA	NA	NA	ND (0.1)	1.2	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	0.0018	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	0.076	0.009	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	NA	NA	NA	NA	NA	NA	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	NA	NA	NA	NA	NA	NA	
Xylenes (total)	3.7	1900	13	17	0.86	210	0.0019	0.056 J	ND (0.1)	ND (0.2)	ND (0.2)	ND (0.1)	0.008	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA	
Anthracene	240	--	--	19000	--	40	NA	NA	NA	NA	NA	NA	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.001)	ND (0.001)	0.002	0.002	ND (0.013)	ND (0.002)	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.001)	ND (0.001)	ND (0.002)	ND (0.002)	ND (0.01)	ND (0.002)	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.001)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.014)	ND (0.002)	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	NA	NA	NA	NA	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.001)	0.001	ND (0.001)	ND (0.001)	0.003	0.004	ND (0.015)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.004)	ND (0.017)	ND (0.002)	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Fluorene	97	--	--	7800	--	7	NA	NA	NA	NA	NA	NA	NA	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.005)	ND (0.005)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.1)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	NA	NA	NA	NA	NA	NA	NA	
Phenanthrene	73	--	--	5800	--	1	NA	NA	NA	NA	NA	NA	NA	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.001)	0.005	0.008	0.007	ND (0.009)	0.0041	NA	
Pyrene	50	--	--	5800	--	3	NA	NA	NA	NA	NA	NA	NA	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-40	S-40	S-40	S-40	S-40	S-40	S-40
							S-40~1/1/1996	S-40~11/19/1997	S-40~11/12/1998	S-40~12/2/1999	S-40~11/16/2000	S-40~11/14/2001	S-40~11/12/2002
							1/1/1996	11/19/1997	11/12/1998	12/2/1999	11/16/2000	11/14/2001	11/12/2002
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	0.1	0.049	0.238	0.099	0.057	0.029	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	0.029	0.02	0.037	ND (0.008)	0.015	0.0222	NA
Barium	--	--	--	--	--	--	0.38	0.26	0.738	0.974	0.187	ND (0.2)	NA
Chromium (total)	--	--	--	--	--	--	0.13	0.068	0.337	0.114	0.036	0.0207	NA
Cobalt	--	--	--	--	--	--	0.028	0.018	0.093	0.045	0.013	ND (0.05)	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-40	S-40	S-40	S-40	S-40	S-40	S-40
							S-40-1 11/13/2003	S40-050305 5/3/2005	S-40_11_8_2005 11/8/2005	S-40~12/6/2006 12/6/2006	S-40~12/18/2007 12/18/2007	S-40_110708 11/7/2008	S-40~11/13/2009 11/13/2009
Physical Parameters													
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds													
Benzene	0.3	550	3.8	4	0.25	130	0.987	0.37 (0.025)	0.436 (0.01)	0.22	0.003	ND (0.001)	0.005
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cumene	37	9100	63	30	4	2.6	NA	0.04 (0.005)	NA	0.017	0.001 J	ND (0.002)	0.004
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	NA	ND (0.00003)	ND (0.00002)	ND (0.0000097)	ND (0.0000095)	ND (0.000029)	ND (0.0000099)
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	NA	ND (0.005)	ND (0.01)	ND (0.001)	ND (0.0005)	ND (0.001)	ND (0.0005)
Ethyl Benzene	2	22000	150	40	9.7	13	0.0195	0.021 (0.005)	0.028 (0.01)	0.008	ND (0.0005)	ND (0.001)	0.0007 J
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
2-Hexanone	--	--	--	--	--	--	NA	NA	0.117 (0.01)	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)	ND (0.005)	ND (0.01)	ND (0.0005)	NA	ND (0.001)	ND (0.0005)
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	0.0369	0.014 (0.005)	0.017 (0.01)	0.009	ND (0.0005)	ND (0.001)	0.0005 J
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	NA	NA	NA	NA	ND (0.002)	ND (0.0005)
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	NA	NA	NA	NA	ND (0.002)	0.0005 J
Xylenes (total)	3.7	1900	13	17	0.86	210	0.0209	0.01 (0.005)	0.056 (0.01)	0.005 J	ND (0.0005)	ND (0.001)	ND (0.0005)
Semivolatile Organic Compounds													
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA
Anthracene	240	--	--	19000	--	40	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.0001)	NA	NA	NA	NA
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	NA	ND (0.0001)	NA	NA	NA	NA
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	NA	ND (0.0001)	NA	NA	NA	NA
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	ND (0.0001)	NA	NA	NA	NA
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chrysene	16	--	--	140000	--	1.3	ND (0.002)	ND (0.01)	ND (0.0001)	ND (0.001)	ND (0.0009)	ND (0.005)	0.00037
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Fluorene	97	--	--	7800	--	7	NA	ND (0.01)	0.0009 (0.0001)	0.003 J	0.001 J	NA	NA
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.002)	NA	ND (0.0001)	NA	NA	NA	NA
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	NA	ND (0.01)	0.012 (0.01)	ND (0.001)	ND (0.001)	ND (0.004)	ND (0.001)
Phenanthrene	73	--	--	5800	--	1	NA	0.016 (0.01)	0.0011 (0.0001)	0.005 J	0.002 J	ND (0.005)	0.0016
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Pyrene	50	--	--	5800	--	3	NA	ND (0.01)	0.0001 (0.0001)	ND (0.001)	ND (0.0009)	ND (0.005)	ND (0.0001)
Perfluoroalkyl and Polyfluoroalkyl Substances													
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location Field Sample ID Collection Depth (ft bgs) Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-40	S-40	S-40	S-40	S-40	S-40	S-40
							S-40-1 11/13/2003	S40-050305 5/3/2005	S-40_11_8_2005 11/8/2005	S-40~12/6/2006 12/6/2006	S-40~12/18/2007 12/18/2007	S-40_110708 11/7/2008	S-40~11/13/2009 11/13/2009
Metals													
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	ND (0.001)	ND (0.01)	NA	NA	NA	NA
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	NA	NA	NA	0.00018 J	0.00012 J	0.00034 J (0.000001)	0.00025 J
Manganese	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Collection Depth (ft bgs)	Sample Date	Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-40 S-40~11/11/2010	S-40 S-40~11/28/2011	S-40 S-40_040813	S-40 S-40_06_17_2013	S-40 S-40_20150518	S-40 S-40-20160519	S-415 AOI3_S-415_121715
											11/11/2010	11/28/2011	4/8/2013	6/17/2013	5/18/2015	5/19/2016	12/17/2015
Physical Parameters																	
	pH [SU]	--	--	--	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds																	
	Benzene	0.3	550	3.8	4	0.25	130	0.072	ND (0.0005)	ND (0.001)	0.00058 J (0.001)	0.01 (0.001)	0.018 (0.001)	0.694 (0.005)			
	sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Cumene	37	9100	63	30	4	2.6	0.012	0.0006 J	ND (0.002)	0.0013 J (0.002)	0.006 (0.002)	0.016 (0.002)	0.0445 (0.001)			
	Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000095)	ND (0.000099)	ND (0.00002)	ND (0.00002)	ND (0.000029)	ND (0.000029)	ND (0.00002)			
	1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)			
	Ethyl Benzene	2	22000	150	40	9.7	13	0.002	ND (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.001 (0.001)	0.0015 (0.001)		
	Hexane	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.0039 (0.001)		
	tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Toluene	25	100000	700	200	45	52	0.003	0.002	ND (0.001)	ND (0.001)	0.002 (0.001)	0.004 (0.001)	0.29 (0.01)			
	1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.0005)	ND (0.0005)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	0.00023 J (0.002)			
	1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	0.0007 J	ND (0.0005)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)			
	Xylenes (total)	3.7	1900	13	17	0.86	210	0.001	ND (0.0005)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	0.001 (0.001)	0.0016 (0.001)		
Semivolatile Organic Compounds																	
	Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Anthracene	240	--	--	19000	--	40	NA	NA	ND (0.0001)	0.000307 (0.0001)	0.0002 J (0.0005)	0.0005 J (0.0005)	0.000204 (0.0001)			
	Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.0001)	0.000236 (0.0001)	ND (0.0005)	0.0002 J (0.0005)	ND (0.0005)			
	Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.0005)			
	Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.0001)			
	Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	NA	ND (0.0001)	ND (0.0001)	ND (0.0005)	ND (0.0005)	ND (0.0001)			
	Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Chrysene	16	--	--	140000	--	1.3	0.001 J	0.006	ND (0.0001)	0.00031 (0.0001)	ND (0.0005)	0.0002 J (0.0005)	ND (0.0001)			
	Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Fluorene	97	--	--	7800	--	7	0.006	0.0067	0.000135 (0.0001)	0.000586 (0.0001)	0.0004 J (0.0005)	0.001 (0.0005)	0.00151 (0.0001)			
	Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.001)	ND (0.0096)	ND (0.0001)	ND (0.0001)	0.0006 (0.0005)	ND (0.0005)	ND (0.0001)			
	Phenanthrene	73	--	--	5800	--	1	0.012	0.0092	0.000255 (0.0001)	0.00127 (0.0001)	0.0006 (0.0005)	0.002 (0.0005)	0.000186 (0.0001)			
	Phenol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Pyrene	50	--	--	5800	--	3	0.002 J	ND (0.00096)	ND (0.0001)	0.000418 (0.0001)	0.0002 J (0.0005)	0.0004 J (0.0005)	ND (0.0001)			
Perfluoroalkyl and Polyfluoroalkyl Substances																	
	Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-40	S-40	S-40	S-40	S-40	S-40	S-415
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration		S-40~11/11/2010	S-40~11/28/2011	S-40_040813	S-40_06_17_2013	S-40_20150518	S-40-20160519	AOI3_S-415_121715
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW		11/11/2010	11/28/2011	4/8/2013	6/17/2013	5/18/2015	5/19/2016	12/17/2015
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Metals														
Arsenic	0.021	--	--	53	--	1.4		NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5		NA	NA	NA	NA	NA	NA	NA
Manganese	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Mercury	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4		NA	NA	NA	NA	NA	NA	NA
Barium	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Lead	--	--	--	--	--	2.5	0.000074 J	ND (0.00008)	ND (0.003)	ND (0.003)	ND (0.003)	0.00019 J (0.001)	ND (0.001)	ND (0.003)
Manganese	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA
Nickel	1.3	--	--	86	--	52		NA	NA	NA	NA	NA	NA	NA
Vanadium	0.14	--	--	6.9	--	100		NA	NA	NA	NA	NA	NA	NA
Zinc	--	--	--	--	--	--		NA	NA	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-416	S-416	S-59D	S-59D	S-59D	S-59D	S-59D
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-416-20160817-WG	S-416-20161012-WG	S59D-050605	S-59D_04072011	D_04072011 FILTERED	S-59D_06292011	D_06292011 FILTERED	S-59D
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW								
Sample Date		Vol to		Direct Contact	VI		8/17/2016	10/12/2016	5/6/2005	4/7/2011	4/7/2011	6/29/2011	6/29/2011	
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	0.00722 (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	NA
sec-Butylbenzene	--	--	--	--	--	--	0.00101 (0.001)	0.00112 (0.001)	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	--	--	--	--	--	--	ND (0.001)	ND (0.001)	NA	NA	NA	NA	NA	NA
Cumene	37	9100	63	30	4	2.6	0.00388 (0.001)	0.00499 (0.001)	ND (0.005)	ND (0.002)	NA	ND (0.002)	NA	NA
Cyclohexane	--	--	--	--	--	--	0.129 (0.001)	0.073 (0.001)	NA	NA	NA	NA	NA	NA
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)	ND (0.00001)	ND (0.000028)	ND (0.000029)	NA	ND (0.000029)	NA	NA
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	NA
Ethyl Benzene	2	22000	150	40	9.7	13	0.00141 (0.001)	0.00125 (0.001)	ND (0.005)	ND (0.001)	NA	ND (0.001)	NA	NA
Hexane	--	--	--	--	--	--	0.00494 (0.001)	ND (0.001)	NA	NA	NA	NA	NA	NA
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.001)	ND (0.001)	ND (0.005)	0.002 (0.001)	NA	0.002 (0.001)	NA	NA
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	25	100000	700	200	45	52	ND (0.005)	ND (0.005)	ND (0.005)	0.0005 J (0.001)	NA	ND (0.001)	NA	NA
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	0.00203 (0.001)	0.00134 (0.001)	NA	ND (0.002)	NA	ND (0.002)	NA	NA
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.001)	ND (0.001)	NA	ND (0.002)	NA	ND (0.002)	NA	NA
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.003)	ND (0.003)	ND (0.005)	0.002 (0.001)	NA	ND (0.001)	NA	NA
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	0.000181 (0.00005)	0.000102 (0.00005)	NA	NA	NA	NA	NA	NA
Anthracene	240	--	--	19000	--	40	0.000083 (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
1,1-Biphenyl	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA	NA
Chrysene	16	--	--	140000	--	1.3	ND (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Fluoranthene	--	--	--	--	--	--	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
Fluorene	97	--	--	7800	--	7	0.000225 (0.00005)	0.00011 (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.00005)	ND (0.00005)	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--	--	--	--	--	--	0.000437 (0.00025)	ND (0.00025)	NA	NA	NA	NA	NA	NA
3&4-Methylphenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA	NA
Naphthalene	0.39	120	0.88	0.28	0.067	43	0.00129 (0.00025)	0.000874 (0.00025)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Phenanthrene	73	--	--	5800	--	1	0.000156 (0.00005)	0.0000621 B (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Phenol	--	--	--	--	--	--	ND (0.01)	ND (0.01)	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)	ND (0.003)	NA	NA	NA	NA	NA	NA
Pyrene	50	--	--	5800	--	3	0.0000663 (0.00005)	ND (0.00005)	ND (0.01)	ND (0.005)	NA	ND (0.005)	NA	NA
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-416 S-416-20160817-WG 8/17/2016	S-416 S-416-20161012-WG 10/12/2016	S-59D S59D-050605 5/6/2005	S-59D S-59D_04072011 ID_04072011 FILTERED 4/7/2011	S-59D S-59D_04072011 ID_04072011 FILTERED 4/7/2011	S-59D S-59D_06292011 ID_06292011 FILTERED 6/29/2011	S-59D S-59D_06292011 ID_06292011 FILTERED 6/29/2011
Metals														
	Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	0.0551 (0.002)	NA	0.0493 (0.002)	NA
	Cobalt	--	--	--	--	--	--	NA	NA	NA	0.0127 (0.005)	NA	0.0112 (0.005)	NA
	Lead	--	--	--	--	--	2.5	NA	NA	ND (0.001)	0.0015 (0.001)	NA	0.00016 J (0.001)	NA
	Manganese	--	--	--	--	--	--	NA	NA	NA	3.01 (0.005)	NA	2.46 (0.005)	NA
	Mercury	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Arsenic	0.021	--	--	53	--	1.4	NA	NA	NA	NA	0.0133 (0.002)	NA	0.0132 (0.002)
	Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
	Cobalt	--	--	--	--	--	--	0.00202 (0.002)	ND (0.002)	NA	NA	0.0119 (0.005)	NA	0.0108 (0.005)
	Lead	--	--	--	--	--	2.5	ND (0.002)	ND (0.002)	NA	NA	ND (0.001)	NA	ND (0.001)
	Manganese	--	--	--	--	--	--	NA	NA	NA	NA	2.91 (0.005)	NA	2.44 (0.005)
	Nickel	1.3	--	--	86	--	52	0.00293 (0.002)	ND (0.002)	NA	NA	NA	NA	NA
	Vanadium	0.14	--	--	6.9	--	100	ND (0.005)	ND (0.005)	NA	NA	NA	NA	NA
	Zinc	--	--	--	--	--	--	ND (0.025)	ND (0.025)	NA	NA	NA	NA	NA

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-59D	S-59D	S-59D	S-59D	S-59D	S-59D	S-96
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S-59D_52512	S-59D_081612	S-59D_102512	S-59D_32913	S-59D-20160819-WG	S-59D-20161011-WG	S-96	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW								
Sample Date		Vol to		Direct Contact	VI		5/25/2012	8/16/2012	10/25/2012	3/29/2013	8/19/2016	10/11/2016	10/20/2004	
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	0.00152 (0.001)	NA	
Cumene	37	9100	63	30	4	2.6	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	ND (0.005)	
Cyclohexane	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.000029)	ND (0.00002)	ND (0.00002)	ND (0.00001)	ND (0.00001)	NA	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	
Hexane	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.001)	ND (0.001)	NA	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	0.004 (0.001)	0.005 (0.001)	0.0044 (0.001)	0.0027 (0.001)	0.00111 (0.001)	0.00313 (0.001)	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.005)	ND (0.005)	ND (0.005)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	NA	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.002)	ND (0.001)	ND (0.001)	NA	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)	ND (0.003)	ND (0.01)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	NA	NA	ND (0.00005)	0.000088 (0.00005)	NA	
Anthracene	240	--	--	19000	--	40	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
Chrysene	16	--	--	140000	--	1.3	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Fluoranthene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
Fluorene	97	--	--	7800	--	7	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	NA	NA	ND (0.00005)	ND (0.00005)	NA	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.00025)	ND (0.00025)	NA	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.0005)	ND (0.0005)	ND (0.005)	ND (0.0001)	ND (0.00025)	ND (0.00025)	ND (0.005)	
Phenanthrene	73	--	--	5800	--	1	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Phenol	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.01)	ND (0.01)	NA	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.003)	ND (0.003)	NA	
Pyrene	50	--	--	5800	--	3	ND (0.0005)	ND (0.0005)	ND (0.001)	ND (0.0001)	ND (0.00005)	ND (0.00005)	NA	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Table D2
Historical Groundwater Sampling Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	S-59D	S-59D	S-59D	S-59D	S-59D	S-59D	S-96						
Field Sample ID	S-59D_52512	S-59D_081612	S-59D_102512	S-59D_32913	S-59D-20160819-WG	S-59D-20161011-WG	S-96						
Collection Depth (ft bgs)	5/25/2012	8/16/2012	10/25/2012	3/29/2013	8/19/2016	10/11/2016	10/20/2004						
Sample Date													
Comments													
Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW								
Metals													
Arsenic	0.021	--	--	53	--	1.4	0.0553 (0.002)	0.0515 (0.002)	0.0543 (0.003)	0.0518 (0.003)	NA	NA	NA
Cobalt	--	--	--	--	--	--	0.0117 (0.005)	0.0112 (0.005)	ND (0.05)	0.0107 J (0.05)	NA	NA	NA
Lead	--	--	--	--	--	2.5	0.0005 J (0.001)	0.000099 J (0.001)	0.0041 (0.003)	0.0093 (0.003)	NA	NA	NA
Manganese	--	--	--	--	--	--	2.54 (0.005)	2.2 (0.005)	1.74 (0.015)	1.82 (0.015)	NA	NA	NA
Mercury	--	--	--	--	--	--	NA	0.000056 J (0.0002)	ND (0.0002)	ND (0.0002)	NA	NA	NA
Arsenic	0.021	--	--	53	--	1.4	0.0125 (0.002)	0.0166 (0.002)	0.0346 (0.003)	0.0331 (0.003)	NA	NA	NA
Barium	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Chromium (total)	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	0.0108 (0.005)	0.0112 (0.005)	ND (0.05)	0.0098 J (0.05)	ND (0.002)	0.007 (0.002)	NA
Lead	--	--	--	--	--	2.5	ND (0.001)	ND (0.001)	0.0047 (0.003)	0.0036 (0.003)	ND (0.002)	ND (0.002)	NA
Manganese	--	--	--	--	--	--	2.43 (0.005)	2.12 (0.005)	1.98 (0.015)	1.95 (0.015)	NA	NA	NA
Nickel	1.3	--	--	86	--	52	NA	NA	NA	NA	0.00285 B (0.002)	0.00248 B (0.002)	NA
Vanadium	0.14	--	--	6.9	--	100	NA	NA	NA	NA	ND (0.005)	ND (0.005)	NA
Zinc	--	--	--	--	--	--	NA	NA	NA	NA	ND (0.025)	ND (0.025)	NA

Notes:

- All concentrations reported in mg/L; detection limits in parentheses.
- Only compounds with at least one detection are shown.
- MS, OE, and SL are unknown qualifiers.
- Boldfaced concentrations exceed the Nonpotable GW Use.
- No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- No concentrations exceed the Routine Worker GW VI.
- Underlined concentrations exceed the Construction Worker GW Direct Contact.
- Italicized concentrations exceed the Off-Site Resident GW VI.
- Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2
Historical Groundwater Sampling Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location								S-96	S-96	S-96	S-97	S-97	S-97	S-97
Field Sample ID	Nonpotable	Routine	Routine	Construction	Off-Site	GW Migration	S96-080105	S-96_06_14_2013	S-96-20160817-WG	S-97	S97-050405	S-97_06_13_2013	S-97-20160817-WG	
Collection Depth (ft bgs)	GW Use	Worker GW	Worker GW VI	Worker GW	Resident GW	to SW	8/1/2005	6/14/2013	8/17/2016	10/20/2004	5/4/2005	6/13/2013	8/17/2016	
Sample Date		Vol to		Direct Contact	VI									
Comments		Outdoor Air												
Physical Parameters														
pH [SU]	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Volatile Organic Compounds														
Benzene	0.3	550	3.8	4	0.25	130	ND (0.005)	0.00046 J (0.001)	0.0454 (0.005)	0.29	0.6 (0.05)	0.0028 (0.001)	ND (0.005)	
sec-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.005)	NA	NA	NA	ND (0.005)	
tert-Butylbenzene	--	--	--	--	--	--	NA	NA	ND (0.005)	NA	NA	NA	ND (0.005)	
Cumene	37	9100	63	30	4	2.6	ND (0.005)	0.00046 J (0.002)	0.0259 (0.005)	0.023	ND (0.05)	0.0048 (0.002)	0.00592 (0.005)	
Cyclohexane	--	--	--	--	--	--	NA	NA	0.168 (0.005)	NA	NA	NA	0.0325 (0.005)	
1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.000029)	ND (0.00002)	ND (0.00001)	ND (0.00002)	ND (0.000028)	ND (0.00002)	ND (0.00001)	
1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005)	ND (0.001)	ND (0.005)	0.004	ND (0.05)	ND (0.001)	ND (0.005)	
Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.005)	ND (0.001)	0.0601 (0.005)	0.055	0.063 (0.05)	0.0019 (0.001)	ND (0.005)	
Hexane	--	--	--	--	--	--	NA	NA	0.109 (0.005)	NA	NA	NA	0.0153 (0.005)	
2-Hexanone	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)	0.0012 (0.001)	ND (0.005)	ND (0.0018)	ND (0.05)	ND (0.001)	ND (0.005)	
tert Butyl alcohol	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	
Toluene	25	100000	700	200	45	52	ND (0.005)	0.0011 (0.001)	0.0511 (0.025)	0.019	ND (0.05)	0.00068 J (0.001)	ND (0.025)	
1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	NA	ND (0.002)	0.00843 (0.005)	NA	NA	0.0093 (0.002)	0.00642 (0.005)	
1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	NA	ND (0.002)	0.0192 (0.005)	NA	NA	0.01 (0.002)	0.0122 (0.005)	
Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.005)	0.00025 J (0.001)	0.082 (0.015)	0.16	0.23 (0.05)	0.0047 (0.001)	ND (0.015)	
Semivolatile Organic Compounds														
Acenaphthene	57	--	--	3900	--	9	NA	NA	0.00181 (0.001)	NA	NA	NA	0.00314 (0.0001)	
Anthracene	240	--	--	19000	--	40	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	0.00117 (0.0001)	
Benzo(a)anthracene	0.1	--	--	1400	--	0.013	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	ND (0.0001)	
Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	ND (0.0001)	
Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	ND (0.0001)	
Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	NA	ND (0.001)	ND (0.001)	NA	NA	ND (0.0001)	ND (0.0001)	
Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	NA	NA	ND (0.001)	NA	NA	NA	ND (0.0001)	
1,1-Biphenyl	--	--	--	--	--	--	NA	NA	ND (0.01)	NA	NA	NA	ND (0.01)	
Chrysene	16	--	--	140000	--	1.3	ND (0.005)	ND (0.001)	ND (0.001)	ND (0.00014)	ND (0.01)	ND (0.0001)	ND (0.0001)	
Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	NA	NA	ND (0.001)	NA	NA	NA	ND (0.0001)	
Fluoranthene	--	--	--	--	--	--	NA	NA	ND (0.001)	NA	NA	NA	0.000199 (0.0001)	
Fluorene	97	--	--	7800	--	7	ND (0.005)	0.00416 (0.001)	0.00247 (0.001)	ND (0.01)	0.025 (0.01)	0.00139 (0.0001)	0.00319 (0.0001)	
Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	NA	NA	ND (0.001)	NA	NA	NA	ND (0.0001)	
2-Methylnaphthalene	--	--	--	--	--	--	NA	NA	0.0162 (0.005)	NA	NA	NA	0.0081 (0.0005)	
3&4-Methylphenol	--	--	--	--	--	--	NA	NA	ND (0.01)	NA	NA	NA	0.0158 (0.01)	
Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.005)	ND (0.001)	0.00577 (0.005)	0.055	<i>0.11 (0.01)</i>	ND (0.0001)	0.0009 (0.0005)	
Phenanthrene	73	--	--	5800	--	1	ND (0.005)	ND (0.001)	0.00321 (0.001)	ND (0.01)	0.047 (0.01)	0.00221 (0.0001)	0.00535 (0.0001)	
Phenol	--	--	--	--	--	--	NA	NA	ND (0.01)	NA	NA	NA	ND (0.01)	
bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	NA	NA	ND (0.003)	NA	NA	NA	ND (0.003)	
Pyrene	50	--	--	5800	--	3	ND (0.005)	0.00311 (0.001)	ND (0.001)	ND (0.01)	ND (0.01)	0.000434 (0.0001)	0.00151 (0.0001)	
Perfluoroalkyl and Polyfluoroalkyl Substances														
Perfluorooctanoic Acid	--	--	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	

Table D2
Historical Groundwater Sampling Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	S-96	S-96	S-96	S-97	S-97	S-97	S-97
Field Sample ID	S96-080105	S-96_06_14_2013	S-96-20160817-WG	S-97	S97-050405	S-97_06_13_2013	S-97-20160817-WG
Collection Depth (ft bgs)	8/1/2005	6/14/2013	8/17/2016	10/20/2004	5/4/2005	6/13/2013	8/17/2016
Sample Date							
Comments							
Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW		
Metals							
Arsenic	0.021	--	--	53	--	1.4	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	ND (0.001)
Manganese	--	--	--	--	--	--	NA
Mercury	--	--	--	--	--	--	NA
Arsenic	0.021	--	--	53	--	1.4	NA
Barium	--	--	--	--	--	--	NA
Chromium (total)	--	--	--	--	--	--	NA
Cobalt	--	--	--	--	--	--	NA
Lead	--	--	--	--	--	2.5	NA
Manganese	--	--	--	--	--	--	NA
Nickel	1.3	--	--	86	--	52	NA
Vanadium	0.14	--	--	6.9	--	100	NA
Zinc	--	--	--	--	--	--	NA

Notes:

- All concentrations reported in mg/L; detection limits in parentheses.
- Only compounds with at least one detection are shown.
- MS, OE, and SL are unknown qualifiers.
- Boldfaced concentrations exceed the Nonpotable GW Use.
- No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- No concentrations exceed the Routine Worker GW VI.
- Underlined concentrations exceed the Construction Worker GW Direct Contact.
- Italicized concentrations exceed the Off-Site Resident GW VI.
- Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Table D2

Historical Groundwater Sampling Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-97 S-97-20161013-WG 10/13/2016
Physical Parameters								
	pH [SU]	--	--	--	--	--	--	NA
Volatile Organic Compounds								
	Benzene	0.3	550	3.8	4	0.25	130	ND (0.005)
	sec-Butylbenzene	--	--	--	--	--	--	ND (0.005)
	tert-Butylbenzene	--	--	--	--	--	--	ND (0.005)
	Cumene	37	9100	63	30	4	2.6	ND (0.005)
	Cyclohexane	--	--	--	--	--	--	0.0242 (0.005)
	1,2-Dibromoethane	0.017	16	0.11	0.91	0.16	--	ND (0.00001)
	1,2-Dichloroethane	0.33	170	1.2	4.9	0.082	3100	ND (0.005)
	Ethyl Benzene	2	22000	150	40	9.7	13	ND (0.005)
	Hexane	--	--	--	--	--	--	0.00735 (0.005)
	2-Hexanone	--	--	--	--	--	--	NA
	Methyl tert-butyl ether	21	29000	210	190	42	11000	ND (0.005)
	tert Butyl alcohol	--	--	--	--	--	--	NA
	Toluene	25	100000	700	200	45	52	ND (0.025)
	1,2,4-Trimethylbenzene	8.7	1400	9.7	15	0.63	33	ND (0.005)
	1,3,5-Trimethylbenzene	8.8	1300	9.1	15	0.59	71	0.0058 (0.005)
	Xylenes (total)	3.7	1900	13	17	0.86	210	ND (0.015)
Semivolatile Organic Compounds								
	Acenaphthene	57	--	--	3900	--	9	0.00228 (0.0001)
	Anthracene	240	--	--	19000	--	40	ND (0.0001)
	Benzo(a)anthracene	0.1	--	--	1400	--	0.013	ND (0.0001)
	Benzo(a)pyrene	0.01	--	--	5.8	--	0.0013	ND (0.0001)
	Benzo(b)fluoranthene	0.16	--	--	1400	--	0.013	ND (0.0001)
	Benzo(g,h,i)perylene	44	--	--	5800	--	0.012	ND (0.0001)
	Benzo(k)fluoranthene	0.99	--	--	14000	--	0.13	ND (0.0001)
	1,1-Biphenyl	--	--	--	--	--	--	ND,OE (0.01)
	Chrysene	16	--	--	140000	--	1.3	ND (0.0001)
	Dibenz(a,h)anthracene	0.0098	--	--	140	--	0.0013	ND (0.0001)
	Fluoranthene	--	--	--	--	--	--	ND (0.0001)
	Fluorene	97	--	--	7800	--	7	0.00268 (0.0001)
	Indeno(1,2,3-cd)pyrene	0.1	--	--	1400	--	0.013	ND (0.0001)
	2-Methylnaphthalene	--	--	--	--	--	--	ND (0.0005)
	3&4-Methylphenol	--	--	--	--	--	--	ND,OE (0.01)
	Naphthalene	0.39	120	0.88	0.28	0.067	43	ND (0.0005)
	Phenanthrene	73	--	--	5800	--	1	0.00364 (0.0001)
	Phenol	--	--	--	--	--	--	ND,OE (0.01)
	bis(2-Ethylhexyl)phthalate	--	--	--	--	--	--	ND (0.003)
	Pyrene	50	--	--	5800	--	3	0.000577 (0.0001)
Perfluoroalkyl and Polyfluoroalkyl Substances								
	Perfluorooctanoic Acid	--	--	--	--	--	--	NA

Table D2

Historical Groundwater Sampling Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	Field Sample ID	Collection Depth (ft bgs)	Sample Date	Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	S-97 S-97-20161013-WG 10/13/2016
Metals											
	Arsenic				0.021	--	--	53	--	1.4	NA
	Cobalt				--	--	--	--	--	--	NA
	Lead				--	--	--	--	--	2.5	NA
	Manganese				--	--	--	--	--	--	NA
	Mercury				--	--	--	--	--	--	NA
	Arsenic				0.021	--	--	53	--	1.4	NA
	Barium				--	--	--	--	--	--	NA
	Chromium (total)				--	--	--	--	--	--	NA
	Cobalt				--	--	--	--	--	--	ND (0.002)
	Lead				--	--	--	--	--	2.5	ND (0.002)
	Manganese				--	--	--	--	--	--	NA
	Nickel				1.3	--	--	86	--	52	ND (0.002)
	Vanadium				0.14	--	--	6.9	--	100	ND (0.005)
	Zinc				--	--	--	--	--	--	ND (0.025)

Notes:

- 1 All concentrations reported in mg/L; detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.
- 3 MS, OE, and SL are unknown qualifiers.
- 4 Boldfaced concentrations exceed the Nonpotable GW Use.
- 5 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 6 No concentrations exceed the Routine Worker GW VI.
- 7 Underlined concentrations exceed the Construction Worker GW Direct Contact.
- 8 Italicized concentrations exceed the Off-Site Resident GW VI.
- 9 Grey shaded concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration
- B - Analyte found in sample and associated blank

Appendix E

Tank Registration Amendment Forms





September 28, 2021

VIA EMAIL (ELECTRONIC SUBMISSION)

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33620 - Point Breeze Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is attaching the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tanks Registration/Permitting Application Form for the removal of the following aboveground storage tank (AST):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	012A	PB 886	P-604	8/26/2021

Tank #012A was a 13,158,600-gallon AST formerly storing Crude Oil.

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,

JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:wc
Attachment

cc: REPSG



STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

51-33620 Facility ID # Phila Ref Point Breeze Facility Name	DEP USE ONLY
	Client ID#
	Site ID#
	Account #
	Auth ID#
	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tanks(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
3144 West Passyunk Avenue				
Address Last Line - City	State	ZIP+4	Country	
Philadelphia	PA	19145	USA	
Client Contact Last Name	First Name	MI	Suffix	
Bowman	Gary	P.	Sr.	
Client Contact Title		Phone	Ext	
President		610-636-4574		
E-mail Address			FAX	
Gbowman@northstar.com				

III. SITE INFORMATION

DEP Site ID#	Site Name				
EPA ID#	Estimated Number of Employees to be Present at Site				
Description of Site					
County Name	Municipality	City <input type="checkbox"/>	Boro <input type="checkbox"/>	Twp <input type="checkbox"/>	State
County Name	Municipality	City <input type="checkbox"/>	Boro <input type="checkbox"/>	Twp <input type="checkbox"/>	State
Site Location Line 1		Site Location Line 2			
Site Location Last Line – City		State	ZIP+4		
Detailed Written Directions to Site					
Site Contact Last Name		First Name	MI	Suffix	
Site Contact Title		Site Contact Firm			
Mailing Address Line 1		Mailing Address Line 2			
Address Last Line – City		State	ZIP+4		
Phone	Ext	FAX	E-mail Address		
NAICS Codes (Two- & Three-Digit Codes – List All That Apply)			6-Digit Code (Optional)		
Site to Client Relationship					

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Individual Last Name	First Name	MI	Suffix	SSN
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
Address Last Line – City		State	ZIP+4	Country
Property Owner Contact Last Name		First Name	MI	Suffix
Property Owner Contact Title		Phone	Ext	
E-mail Address			FAX	

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State ZIP+4				
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	--or--	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	--or--	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
	--or--	Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that Issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.				
DEP Client ID#	Client Type / Code					
Organization Name or Registered Fictitious Name			Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1		Mailing Address Line 2				
Address Last Line - City		State	ZIP+4	Country		
Client Contact Last Name		First Name	MI	Suffix		
Client Contact Title			Phone	Ext		
E-mail Address				FAX		

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
- Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name _____
Employer ID# (EIN) or SSN _____
Mailing Address Line 1 _____
Mailing Address Line 2 _____
Address Last Line - City _____ State _____ ZIP+4 _____
Previous Facility ID# _____

DATE OF SALE/TRANSFER	
-----------------------	--

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name _____

Previous Owner Signature Title Date

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The **DEP Certified Installer** should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer:						
Model:						
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an ☒ in the appropriate box for each tank that was removed or closed in place.

<i>Items 2 & 3 below apply to large ASTs and all USTs</i>	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	012A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

	President	9/23/2021
Owner Signature	Title	Date

Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
2250 East Adams Avenue				
Address Last Line – City	State	ZIP+4	Country	
Philadelphia	PA	19124	USA	
Contact Title	Phone		Ext.	
President	610-636-4574			
E-mail Address				
Gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
012A	Kristian Satterthwaite	API 650	5081	AFR	1557	<i>Kristian Satterthwaite</i>	9/27/21

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



2250 E Adams Ave • Philadelphia, PA 19124
Office: 215.533.8890 • Fax: 215.533.8897
Website • www.NorthStar.com

April 27, 2022

Pennsylvania Department of Environmental Protection
Southeast Regional Office
Division of Storage Tanks
2 East Main Street
Norristown, Pennsylvania 19401
Via email: RA-serotanks@pa.gov, ra-tanks@pa.gov

**Re: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID # 51-33620 – Point Breeze Refinery**

To whom it may concern:

Please find NorthStar Contracting Group, Inc.’s submittal of the Pennsylvania Department of Environmental Protection’s (PADEP’s) Storage Tank Registration/Permitting Application Form for the removal of the following one (1) aboveground storage tanks located at the Philadelphia Energy Solutions Refining and Marketing, LLC Point Breeze site.

Removed					
Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	049A	PB-826	P-579	04/18/2022

If you have any questions, please do not hesitate to contact me at 440-228-1524.

Respectfully Submitted,

Robert Armstrong
Sr. Project Manager
NorthStar Contracting Group, Inc.

Enclosures: Storage Tank Registration/Permitting Application Form

cc:

- Gary Bowman (NorthStar)
- Dr. Kassahun Sellassie (AMS)
- Thomas Barsley (AMS)
- Charles Barksdale (Hilco)
- Edward Wiener (AMS)
- Mike Leonardo (Hilco)



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
51-33620 Facility ID #	Client ID#
Phila Ref Point Breeze Facility Name	Site ID#
	Account #
	Auth ID#
	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tanks(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)			
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt	
Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#	
Philadelphia Energy Solutions Refining and Marketing, LLC					
Individual Last Name	First Name	MI	Suffix	SSN	
Bowman	Gary	P	Sr.		
Additional Individual Last Name	First Name	MI	Suffix	SSN	
Mailing Address Line 1		Mailing Address Line 2			
3144 West Passyunk Avenue					
Address Last Line – City	State	ZIP+4	Country		
Philadelphia	PA	19145	USA		
Client Contact Last Name	First Name	MI	Suffix		
Bowman	Gary	P	Sr.		
Client Contact Title	Phone		Ext		
President	610-636-4574				
E-mail Address	FAX				
gbowman@northstar.com					

III. SITE INFORMATION

DEP Site ID#	Site Name				
EPA ID#	Estimated Number of Employees to be Present at Site				
Description of Site					
County Name	Municipality	City <input type="checkbox"/>	Boro <input type="checkbox"/>	Twp <input type="checkbox"/>	State
County Name	Municipality	City <input type="checkbox"/>	Boro <input type="checkbox"/>	Twp <input type="checkbox"/>	State
Site Location Line 1		Site Location Line 2			
Site Location Last Line – City		State	ZIP+4		
Detailed Written Directions to Site					
Site Contact Last Name	First Name	MI	Suffix		
Site Contact Title		Site Contact Firm			
Mailing Address Line 1		Mailing Address Line 2			
Address Last Line – City		State	ZIP+4		
Phone	Ext	FAX	E-mail Address		
NAICS Codes (Two- & Three-Digit Codes – List All That Apply)			6-Digit Code (Optional)		
Site to Client Relationship					

IIIa. PROPERTY OWNER INFORMATION

<input type="checkbox"/> Same as Tank Owner Identified in Section II. <input type="checkbox"/> Different than Tank Owner Identified in Section II; identified below.				
Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Individual Last Name	First Name	MI	Suffix	SSN
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
Address Last Line – City		State	ZIP+4	Country
Property Owner Contact Last Name	First Name	MI	Suffix	
Property Owner Contact Title		Phone	Ext	
E-mail Address			FAX	

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State ZIP+4				
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	--or--	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	--or--	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es) =	Feet			
	--or--	Centimeter(s) =	Meters			
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that Issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.		
DEP Client ID#	Client Type / Code			
Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Individual Last Name	First Name	MI	Suffix	SSN
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
Address Last Line - City	State	ZIP+4	Country	
Client Contact Last Name	First Name	MI	Suffix	
Client Contact Title	Phone		Ext	
E-mail Address	FAX			

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
- Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name _____

Employer ID# (EIN) or SSN _____

Mailing Address Line 1 _____

Mailing Address Line 2 _____

Address Last Line - City _____ State _____ ZIP+4 _____

Previous Facility ID# _____

DATE OF SALE/TRANSFER	_____
-----------------------	-------

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name _____

Previous Owner Signature

Title

Date

Facility ID#

Facility Name

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.

Status Codes: C-Currently in Use T-Temporarily Out of Use E-Exempt R-Removed P-Closed In Place

Type Codes: M-Manufactured F-Field Constructed

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code
049A	C	R	F	1958	04/18/2022	8,568,000		Crude		

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID#

Facility Name

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	Tank Manufacturer:					
	Model:					
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an in the appropriate box for each tank that was removed or closed in place.

<i>Items 2 & 3 below apply to large ASTs and all USTs</i>	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	049A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name : Gary Bowman

 Owner Signature	President Title	04/27/2022 Date
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Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below


Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
2250 East Adams Ave.				
Address Last Line – City	State	ZIP+4	Country	
Philadelphia	PA	19124	USA	
Contact Title	Phone		Ext.	
President	610-636-4574			
E-mail Address				
gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
049A	Brian Gerner	API 12C	5341	AFMX	1631		4/27/2022

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



September 28, 2021

VIA EMAIL (ELECTRONIC SUBMISSION)

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33620 - Point Breeze Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is attaching the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tanks Registration/Permitting Application Form for the removal of the following aboveground storage tank (AST):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	059A	PB 885	P-603	9/23/2021

Tank 059A was a 13,158,600-gallon AST which formerly stored Crude Oil.

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,

JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:wc
Attachment

cc: REPSG



STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
51-33620	Client ID#
Facility ID #	Site ID#
Phila Ref Point Breeze	Account #
Facility Name	Auth ID#
	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tanks(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
3144 West Passyunk Avenue				
Address Last Line – City	State	ZIP+4	Country	
Philadelphia	PA	19145	USA	
Client Contact Last Name	First Name	MI	Suffix	
Bowman	Gary	P.	Sr.	
Client Contact Title	Phone		Ext	
President	610-636-4574			
E-mail Address				FAX
Gbowman@northstar.com				

III. SITE INFORMATION

DEP Site ID# Site Name

EPA ID# Estimated Number of Employees to be Present at Site

Description of Site

County Name Municipality City Boro Twp State

County Name Municipality City Boro Twp State

Site Location Line 1 Site Location Line 2

Site Location Last Line – City State ZIP+4

Detailed Written Directions to Site

Site Contact Last Name First Name MI Suffix

Site Contact Title Site Contact Firm

Mailing Address Line 1 Mailing Address Line 2

Address Last Line – City State ZIP+4

Phone Ext FAX E-mail Address

NAICS Codes (Two- & Three-Digit Codes – List All That Apply) 6-Digit Code (Optional)

Site to Client Relationship

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name Employer ID# (EIN) Dun & Bradstreet ID#

Individual Last Name First Name MI Suffix SSN

Additional Individual Last Name First Name MI Suffix SSN

Mailing Address Line 1 Mailing Address Line 2

Address Last Line – City State ZIP+4 Country

Property Owner Contact Last Name First Name MI Suffix

Property Owner Contact Title Phone Ext

E-mail Address FAX

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State ZIP+4				
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	--or--	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	--or--	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
	--or--	Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that Issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.				
DEP Client ID#	Client Type / Code					
Organization Name or Registered Fictitious Name			Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1		Mailing Address Line 2				
Address Last Line - City	State	ZIP+4	Country			
Client Contact Last Name	First Name	MI	Suffix			
Client Contact Title	Phone		Ext			
E-mail Address	FAX					

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
- Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name _____
Employer ID# (EIN) or SSN _____
Mailing Address Line 1 _____
Mailing Address Line 2 _____
Address Last Line - City _____ State _____ ZIP+4 _____
Previous Facility ID# _____

DATE OF SALE/TRANSFER	_____
-----------------------	-------

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name _____

Previous Owner Signature Title Date

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The **DEP Certified Installer** should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer:						
Model:						
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an ☒ in the appropriate box for each tank that was removed or closed in place.

<i>Items 2 & 3 below apply to large ASTs and all USTs</i>	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	059A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

	President	9/27/2021
Owner Signature	Title	Date

Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.		

Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr.	

Additional Individual Last Name	First Name	MI	Suffix	SSN

Mailing Address Line 1	Mailing Address Line 2
2250 East Adams Avenue	

Address Last Line – City	State	ZIP+4	Country
Philadelphia	PA	19124	USA

Contact Title	Phone	Ext.
President	610-636-4574	

E-mail Address
Gbowman@northstar.com

Client to Site (Facility) Relationship

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
059A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	9/29/21

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



2250 E Adams Ave • Philadelphia, PA 19124
Office: 215.533.8890 • Fax: 215.533.8897
Website • www.NorthStar.com

February 4, 2022

Pennsylvania Department of Environmental Protection
Southeast Regional Office
Division of Storage Tanks
2 East Main Street
Norristown, Pennsylvania 19401
Via email: RA-serotanks@pa.gov, ra-tanks@pa.gov

**Re: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33620 - Point Breeze Refinery**

To whom it may concern:

Please find NorthStar Contracting Group, Inc.'s submittal of the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tank Registration/Permitting Application Forms for the removal of the following five (5) aboveground storage tanks located at the Philadelphia Energy Solutions Refining and Marketing, LLC Point Breeze site.

Removed					
Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	011A	PB 881	P-599	01/08/2022
Point Breeze Refinery	51-33620	088A	PB 848	P-595	01/20/2022
Point Breeze Refinery	51-33620	045A	PB 821	P-574	01/26/2022
Point Breeze Refinery	51-33620	046A	PB 822	P-575	01/31/2022
Point Breeze Refinery	51-33620	055A	PB 847	P-594	02/03/2022

If you have any questions, please do not hesitate to contact me at 440-228-1524.

Respectfully Submitted,

Robert Armstrong
Sr. Project Manager
NorthStar Contracting Group, Inc.
Enclosures: Storage Tank Registration/Permitting Application Form

cc:

Gary Bowman (NorthStar)
Dr. Kassahun Sellassie (AMS)
Thomas Barsley (AMS)
Charles Barksdale (Hilco)

Edward Wiener (AMS)
Mike Leonardo (Hilco)

STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
51-33620	Client ID#
Facility ID #	Site ID#
Phila Ref Point Breeze	Account #
Facility Name	Auth ID#
	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tank(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed In Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
3144 West Passyunk Avenue				
Address Last Line - City	State	ZIP+4	Country	
Philadelphia	PA	19146	USA	
Client Contact Last Name	First Name	MI	Suffix	
Bowman	Gary	P	Sr.	
Client Contact Title	Phone		Ext	
President	610-636-4574			
E-mail Address				FAX
gbowman@northstar.com				

III. SITE INFORMATION

DEP Site ID#	Site Name				
EPA ID#	Estimated Number of Employees to be Present at Site				
Description of Site					
County Name	Municipality	City	Boro	Twp	State
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
County Name	Municipality	City	Boro	Twp	State
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Site Location Line 1		Site Location Line 2			
Site Location Last Line - City		State	ZIP+4		
Detailed Written Directions to Site					

Site Contact Last Name	First Name	MI	Suffix		
Site Contact Title		Site Contact Firm			
Mailing Address Line 1		Mailing Address Line 2			
Address Last Line - City		State	ZIP+4		
Phone	Ext	FAX	E-mail Address		
NAICS Codes (Two- & Three-Digit Codes - List All That Apply)				6-Digit Code (Optional)	
Site to Client Relationship					

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN	
Additional Individual Last Name	First Name	MI	Suffix	SSN	
Mailing Address Line 1		Mailing Address Line 2			
Address Last Line - City		State	ZIP+4	Country	
Property Owner Contact Last Name		First Name	MI	Suffix	
Property Owner Contact Title		Phone	Ext		
E-mail Address			FAX		

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State ZIP+4				
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degree	Minutes	Seconds	Degree	Minutes	Seconds
Horizontal Accuracy Measure	Feet	-or-	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	-or-	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
	-or-	Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.				
DEP Client ID#	Client Type / Code					
Organization Name or Registered Fictitious Name			Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1		Mailing Address Line 2				
Address Last Line - City	State	ZIP+4	Country			
Client Contact Last Name	First Name	MI	Suffix			
Client Contact Title		Phone	Ext			
E-mail Address			FAX			

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
- Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name _____
Employer ID# (EIN) or SSN _____
Mailing Address Line 1 _____
Mailing Address Line 2 _____
Address Last Line - City _____ State _____ ZIP+4 _____
Previous Facility ID# _____

DATE OF SALE/TRANSFER	_____
-----------------------	-------

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name _____

Previous Owner Signature Title Date

Facility ID#

Facility Name

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank Manufacturer Model:									
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Underground Piping Construction & Corrosion Protection – Single-Inner Wall (26)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer: Model:								
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer: Model:								
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-lined Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Aboveground Piping Construction & Corrosion Protection (3)	Tank #					
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #					
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #					
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required apertures)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Well ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage 1 Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an in the appropriate box for each tank that was removed or closed in place.

	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Items 2 & 3 below apply to large ASTs and all USTs	011A	088A	045A	046A	066A	
1 Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989 all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements)
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name : Gary Bowman

	President	02/03/2022
Owner Signature	Title	Date

Information & Invoices should be sent to:




- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1	Mailing Address Line 2			
2250 East Adams Ave.				
Address Last Line - City	State	ZIP+4	Country	
Philadelphia	PA	19124	USA	
Contact Title	Phone		Ext.	
President	610-636-4574			
E-mail Address				
gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)
As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
011A	Brian Garner	API 12C	5341	AFMX	1631		2/21/22
066A	Brian Garner	API 12C	5341	AFMX	1631		2/14/22
045A	Brian Garner	API 12C	5341	AFMX	1631		2/14/22
044A	Brian Garner	API 12C	5341	AFMX	1631		2/14/22
055A	Brian Garner	API 12C	5341	AFMX	1631		2/14/22

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print Name) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



2250 E. Adams Ave • Philadelphia, PA 19124
Office: 215.533.8890 • Fax: 215.533.8897
Website • www.NorthStar.com

March 30, 2022

Pennsylvania Department of Environmental Protection
Southeast Regional Office
Division of Storage Tanks
7 East Main Street
Norristown, Pennsylvania 19401
Via email: RAsemtanks@pa.gov, casotanks@pa.gov

Re: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID # 51-33620 – Point Breeze Refinery

To whom it may concern:

Please find NorthStar Contracting Group, Inc.'s subtotal of the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tank Registration/Permitting Application Form for the removal of the following six (6) aboveground storage tanks located at the Philadelphia Energy Solutions Refining and Marketing, LLC Point Breeze site.

Removed					
Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	034A	PB-151	P-534	03/22/2022
Point Breeze Refinery	51-33620	010A	PB-835	P-584	03/30/2022
Point Breeze Refinery	51-33620	052A	PD-836	P-585	03/30/2022
Point Breeze Refinery	51-33620	053A	PB-840	P-587	03/04/2022
Point Breeze Refinery	51-33620	054A	PB-841	P-588	03/14/2022
Point Breeze Refinery	51-33620	086A	PB-843	P-590	03/16/2022

If you have any questions, please do not hesitate to contact me at 440-228-1524.

Respectfully Submitted,

Robert Armstrong
Sr. Project Manager
NorthStar Contracting Group, Inc.
Enclosures: Storage Tank Registration/Permitting Application Form

cc:

Gary Downum (NorthStar)
Dr. Kassahun Sellasie (AMS)
Thomas Batsley (AMS)
Charles Darkdale (Hisco)

Edward Wiener (AMS)
Mike Leonardo (Hisco)



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
61-33620	Client ID#
Facility ID #	Site ID#
	Account #
Phila Ref Point Breeze	Auth ID#
Facility Name	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tank(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
3144 West Passyunk Avenue				
Address Last Line - City	State	ZIP+4	Country	
Philadelphia	PA	19145	USA	
Client Contact Last Name	First Name	MI	Suffix	
Bowman	Gary	P	Sr.	
Client Contact Title	Phone		Ext	
President	610-636-4574			
E-mail Address				FAX
gbowman@northstar.com				

III. SITE INFORMATION

DEP Site ID# Site Name

EPA ID# Estimated Number of Employees to be Present at Site

Description of Site

County Name Municipality City Boro Twp State

County Name Municipality City Boro Twp State

Site Location Line 1 Site Location Line 2

Site Location Last Line - City State ZIP+4

Detailed Written Directions to Site

Site Contact Last Name First Name MI Suffix

Site Contact Title Site Contact Firm

Mailing Address Line 1 Mailing Address Line 2

Address Last Line - City State ZIP+4

Phone Ext FAX E-mail Address

NAICS Codes (Two- & Three-Digit Codes - List All That Apply) 6-Digit Code (Optional)

Site to Client Relationship

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner identified in Section II; identified below.

Organization Name or Registered Fictitious Name Employer ID# (EIN) Dun & Bradstreet ID#

Individual Last Name First Name MI Suffix SSN

Additional Individual Last Name First Name MI Suffix SSN

Mailing Address Line 1 Mailing Address Line 2

Address Last Line - City State ZIP+4 Country

Property Owner Contact Last Name First Name MI Suffix

Property Owner Contact Title Phone Ext

E-mail Address FAX

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State ZIP+4				
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	-or-	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	-or-	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
		Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.				
DEP Client ID#	Client Type / Code					
Organization Name or Registered Fictitious Name			Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1		Mailing Address Line 2				
Address Last Line - City		State	ZIP+4	Country		
Client Contact Last Name	First Name	MI	Suffix			
Client Contact Title		Phone		Ext		
E-mail Address				FAX		

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
 Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name _____

Employer ID# (EIN) or SSN _____

Mailing Address Line 1 _____

Mailing Address Line 2 _____

Address Last Line - City _____

State _____

ZIP+4 _____

Previous Facility ID# _____

DATE OF SALE/TRANSFER

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name _____

Previous Owner Signature _____

Title _____

Date _____

Facility ID#

Facility Name

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

	Tank Construction & Corrosion Protection (1)						
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer: _____							
Model: _____							
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel w/With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Underground Piping Construction & Corrosion Protection - Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:							
Model:							
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
89. Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection - Outer Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:							
Model:							
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
89. Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# _____ Facility Name _____

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (5)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

	Overfill Prevention (7)					
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 26 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Emergency Containment (16)					
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Secondary Containment (17)					
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Stage 1 Vapor Recovery (19)					
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
USTs and ASTs when applicable						
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

Tank-top Containment Sumps Present (Product Piping Only) (24) USTs only		Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only		Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only		Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)		Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID#

Facility Name

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an in the appropriate box for each tank that was removed or closed in place.

Items 2 & 3 below apply to large ASTs and all USTs	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	034A	010A	052A	053A	054A	095A
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name : Gary Bowman

	President	03-30-2022
Owner Signature	Title	Date

Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below





Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1	Mailing Address Line 2			
2250 East Adams Ave.				
Address Last Line - City	State	ZIP+4	Country	
Philadelphia	PA	19124	USA	
Contact Title	Phone		Ext.	
President	810-636-4574			
E-mail Address				
gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a Tank Modification Report form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in this category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1999 and all applicable regulations. I also certify, under penalty of law as provided in 18 P.A.C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tanker	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
034A	Brian Garner	API 12C	5341	AFMAX	1631		3/30/22
010A	Brian Garner	API 12C	5341	AFMAX	1631		3/30/22
052A	Brian Garner	API 12C	5341	AFMAX	1631		3/30/22
063A	Brian Garner	API 12C	5341	AFMAX	1631		3/30/22
054A	Brian Garner	API 12C	5341	AFMAX	1631		3/30/22
080A	Brian Garner	API 12C	5341	AFMAX	1631		3/30/22

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications, that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1999, and all applicable regulations. I also certify under penalty of law as provided in 18 P.A.C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tanker	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tanker	Tanker	Tanker	Tanker	Tanker	Tanker	Tanker	Tanker	Tanker



June 21, 2021

Pennsylvania Department of Environmental Protection
 Southeast Regional Office
 Division of Storage Tanks
 2 East Main Street
 Norristown, Pennsylvania 19401
 Attn: Mr. Ron Estel
restel@pa.gov

**Re: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
 PADEP Storage Tanks Registration/ Permitting Application Form
 PADEP Facility ID #51-33620 - Point Breeze Refinery**

Mr. Estel:

On behalf of our client, Northstar, enclosed please find JD2 Environmental, Inc.'s (JD2's) submittal of the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tank Registration/ Permitting Application Forms to change the status to permanently closed for ten (10) tanks located at the Philadelphia Energy Solutions Refining and Marketing, LLC site.

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	056A	PB 882	P-600 (PB)	5/20/2021
Point Breeze Refinery	51-33620	002A	PB 33	P-507 (PB)	5/21/2021
Point Breeze Refinery	51-33620	029A	PB 84	P-519 (PB)	5/26/2021
Point Breeze Refinery	51-33620	938A	PB 178	P-541 (PB)	5/27/2021
Point Breeze Refinery	51-33620	039A	PB 179	P-542 (PB)	6/04/2021
Point Breeze Refinery	51-33620	028A	PB 43	P-516 (PB)	6/07/2021
Point Breeze Refinery	51-33620	027A	PB 42	P-515 (PB)	6/09/2021
Point Breeze Refinery	51-33620	004A	PB 83	P-518 (PB)	6/10/2021
Point Breeze Refinery	51-33620	085A	PB 1224	N/A	6/11/2021
Point Breeze Refinery	51-33620	025A	PB 39	P-513 (PB)	6/16/2021

If you have any questions, please do not hesitate to contact me at 215-852-9226.

Respectfully Submitted,
React Environmental Professional Services Group, Inc.



Jerry F. Naples, Jr.
Principal

Enclosures: JD2 letter
Storage Tank Registration Amendment Forms (Point Breeze)

cc:

Robert Armstrong (Northstar)
Gary Bowman (Northstar)
Kassahun Sellassie (AMS)
Charles Barksdale (Hilco)

Kris Satterthwaite (JD2 Environmental)
Thomas Barsley (AMS)
Edward Wiener (AMS)
Mike Leonardo (Hilco)





June 21, 2021

VIA EMAIL (ELECTRONIC SUBMISSION)

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33620 - Point Breeze Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is attaching the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tanks Registration/Permitting Application Form for the removal of the following aboveground storage tanks (ASTs):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	027A	PB 42	P-515	6/09/2021
Point Breeze Refinery	51-33620	004A	PB 83	P-518	6/10/2021
Point Breeze Refinery	51-33620	085A	PB 1224	N/A	6/11/2021
Point Breeze Refinery	51-33620	025A	PB 39	P-513	6/16/2021

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,

JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:wc
Attachment

cc: REPSG



STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
51-33620	Client ID#
Facility ID #	Site ID#
Phila Ref Point Breeze	Account #
Facility Name	Auth ID#
	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tanks(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
3144 W. Passyunk Ave				
Address Last Line – City	State	ZIP+4	Country	
Philadelphia	PA	19141-5299	USA	
Client Contact Last Name	First Name	MI	Suffix	
Bowman	Gary	P	Sr	
Client Contact Title	Phone		Ext	
President	610 636-4574			
E-mail Address				FAX
Gbowman@northstar.com				

III. SITE INFORMATION

DEP Site ID#	Site Name				
EPA ID#	Estimated Number of Employees to be Present at Site				
Description of Site					
County Name	Municipality	City <input type="checkbox"/>	Boro <input type="checkbox"/>	Twp <input type="checkbox"/>	State
County Name	Municipality	City <input type="checkbox"/>	Boro <input type="checkbox"/>	Twp <input type="checkbox"/>	State
Site Location Line 1		Site Location Line 2			
Site Location Last Line – City		State	ZIP+4		
Detailed Written Directions to Site					
Site Contact Last Name		First Name	MI	Suffix	
Site Contact Title		Site Contact Firm			
Mailing Address Line 1		Mailing Address Line 2			
Address Last Line – City		State	ZIP+4		
Phone	Ext	FAX	E-mail Address		
NAICS Codes (Two- & Three-Digit Codes – List All That Apply)			6-Digit Code (Optional)		
Site to Client Relationship					

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Individual Last Name	First Name	MI	Suffix	SSN
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
Address Last Line – City		State	ZIP+4	Country
Property Owner Contact Last Name		First Name	MI	Suffix
Property Owner Contact Title		Phone	Ext	
E-mail Address			FAX	

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State	ZIP+4			
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	--or--	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	--or--	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
	--or--	Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that Issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.				
DEP Client ID#	Client Type / Code					
Organization Name or Registered Fictitious Name			Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1		Mailing Address Line 2				
Address Last Line – City	State	ZIP+4	Country			
Client Contact Last Name	First Name	MI	Suffix			
Client Contact Title		Phone	Ext			
E-mail Address			FAX			

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
- Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name _____

Employer ID# (EIN) or SSN _____

Mailing Address Line 1 _____

Mailing Address Line 2 _____

Address Last Line - City _____ State _____ ZIP+4 _____

Previous Facility ID# _____

DATE OF SALE/TRANSFER	_____
-----------------------	-------

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name _____

Previous Owner Signature Title Date

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The **DEP Certified Installer** should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer:						
Model:						
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Facility Name Phila Ref Point Breeze

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an in the appropriate box for each tank that was removed or closed in place.

<i>Items 2 & 3 below apply to large ASTs and all USTs</i>	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	027A	004A	085A	025A		
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

	President	6/18/2021
Owner Signature	Title	Date

Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Northstar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
250 E. Adams Avenue				
Address Last Line – City	State	ZIP+4	Country	
Philadelphia	PA	19124	USA	
Contact Title	Phone		Ext.	
President				
E-mail Address				
Gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
027A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/18/2021
004A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/18/2021
085A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/18/2021
025A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/18/2021

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



June 21, 2021

VIA EMAIL (ELECTRONIC SUBMISSION)

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33620 - Point Breeze Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is attaching the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tanks Registration/Permitting Application Form for the removal of the following aboveground storage tanks (ASTs):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	056A	PB 882	P-600	5/20/2021
Point Breeze Refinery	51-33620	002A	PB 33	P-507	5/21/2021
Point Breeze Refinery	51-33620	029A	PB 84	P-519	5/26/2021
Point Breeze Refinery	51-33620	938A	PB 178	P-541	5/27/2021
Point Breeze Refinery	51-33620	039A	PB 179	P-542	6/04/2021
Point Breeze Refinery	51-33620	028A	PB 43	P-516	6/07/2021

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,

JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:wc
Attachment

cc: REPSG



STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

	DEP USE ONLY
51-33620	Client ID#
Facility ID #	Site ID#
Phila Ref Point Breeze	Account #
Facility Name	Auth ID#
	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tanks(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#		
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1	Mailing Address Line 2			
3144 W. Passyunk Ave				
Address Last Line – City	State	ZIP+4	Country	
Philadelphia	PA	19141-5299	USA	
Client Contact Last Name	First Name	MI	Suffix	
Bowman	Gary	P	Sr	
Client Contact Title	Phone		Ext	
President	610 636-4574			
E-mail Address				FAX
Gbowman@northstar.com				

III. SITE INFORMATION

DEP Site ID# Site Name

EPA ID# Estimated Number of Employees to be Present at Site

Description of Site

County Name Municipality City Boro Twp State

County Name Municipality City Boro Twp State

Site Location Line 1 Site Location Line 2

Site Location Last Line – City State ZIP+4

Detailed Written Directions to Site

Site Contact Last Name First Name MI Suffix

Site Contact Title Site Contact Firm

Mailing Address Line 1 Mailing Address Line 2

Address Last Line – City State ZIP+4

Phone Ext FAX E-mail Address

NAICS Codes (Two- & Three-Digit Codes – List All That Apply) 6-Digit Code (Optional)

Site to Client Relationship

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name Employer ID# (EIN) Dun & Bradstreet ID#

Individual Last Name First Name MI Suffix SSN

Additional Individual Last Name First Name MI Suffix SSN

Mailing Address Line 1 Mailing Address Line 2

Address Last Line – City State ZIP+4 Country

Property Owner Contact Last Name First Name MI Suffix

Property Owner Contact Title Phone Ext

E-mail Address FAX

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State	ZIP+4			
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	--or--	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	--or--	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
	--or--	Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that Issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.				
DEP Client ID#	Client Type / Code					
Organization Name or Registered Fictitious Name			Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1		Mailing Address Line 2				
Address Last Line – City	State	ZIP+4	Country			
Client Contact Last Name	First Name	MI	Suffix			
Client Contact Title		Phone	Ext			
E-mail Address			FAX			

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
- Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name _____
Employer ID# (EIN) or SSN _____
Mailing Address Line 1 _____
Mailing Address Line 2 _____
Address Last Line - City _____ State _____ ZIP+4 _____
Previous Facility ID# _____

DATE OF SALE/TRANSFER	_____
-----------------------	-------

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name _____

Previous Owner Signature Title Date

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The **DEP Certified Installer** should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer:						
Model:						
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an ☒ in the appropriate box for each tank that was removed or closed in place.

<i>Items 2 & 3 below apply to large ASTs and all USTs</i>	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	056A	002A	029A	038A	039A	028A
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>


IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

	President	6/18/2021
Owner Signature	Title	Date

Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
Northstar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
250 E. Adams Avenue				
Address Last Line – City	State	ZIP+4	Country	
Philadelphia	PA	19124	USA	
Contact Title	Phone		Ext.	
President				
E-mail Address				
Gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
056A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/18/2021
002A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/18/2021
029A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/18/2021
938A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/15/2021
039A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/18/2021
028A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	6/18/2021

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



2250 E. Adams Ave • Philadelphia, PA 19124
 Office: 215.533.8890 • Fax: 215.533.8897
 Website • www.NorthStar.com

December 21, 2021

Pennsylvania Department of Environmental Protection
 Southeast Regional Office
 Division of Storage Tanks
 2 East Main Street
 Norristown, Pennsylvania 19401
 Via email: RAAboveTanks@pa.gov, ra-tanks@pa.gov

Re: Philadelphia Energy Solutions Refining and Marketing, LLC (PESRM)
 Above Ground Storage Tanks Change in Status

To whom it may concern:

Please find attached the Storage Tank Registration/Permitting Application Forms that support the information listed in the following table. Four (4) AST's have been removed from the Point Breeze Process Area and One (1) AST was removed from the Girard Point Process Area. In addition to these five removals the status of one (1) AST at the Girard Point Process Area has been changed from Currently In Use "C" to Temporarily Out of Service "T".

Removed					
Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	058A	PB 884	P-602	11/01/2021
Point Breeze Refinery	51-33620	040A	PB 191	P-546	11/23/2021
Point Breeze Refinery	51-33620	051A	PB 883	P-601	11/24/2021
Point Breeze Refinery	51-33620	047A	PB 823	P-576	12/03/2021
Girard Point Refinery	51-33624	015A	GP 225	P-146	11/15/2021
Amended					
Girard Point Refinery	51-33624	066A	GP 973	N/A	11/15/2021

If you have any questions, please do not hesitate to contact me at 440.229.1524

Respectfully Submitted,

Robert Armstrong
 Sr. Project Manager
 NorthStar Contracting Group, Inc.
 or:

Gary Bowman (NorthStar)
 Dr. Kassahun Sellassie (AMS)
 Thomas Bersley (AMS)

Edward Wiener (AMS)
 Charles Barksdale (Hilco)
 Mike Leonardo (Hilco)



December 14, 2021

VIA EMAIL (ELECTRONIC SUBMISSION)

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33620 - Point Breeze Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is attaching the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tanks Registration/Permitting Application Form for the removal of the following aboveground storage tank (AST):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	058A	PB 884	P-602	11/01/2023

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,

JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:wc
Attachment

cc: REPSG



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

**STORAGE TANKS REGISTRATION / PERMITTING
APPLICATION FORM**

Before completing this form, read the step-by-step instructions provided in this application package.

51-33620 Facility ID # Phka Ref Point Breeze Facility Name	DEP USE ONLY
	Client ID#
	Site ID#
	Account #
	Auth ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tank(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2830-PM-BECB0614e) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#		
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1	Mailing Address Line 2			
3144 West Passyunk Avenue				
Address Last Line - City	State	ZIP+4	Country	
Philadelphia	PA	19145	USA	
Client Contact Last Name	First Name	MI	Suffix	
Bowman	Gary	P.	Sr.	
Client Contact Title	Phone	Ext		
President	610-638-4574			
E-mail Address				FAX
Gbowman@northstar.com				

III. SITE INFORMATION

DEP Site ID#	Site Name				
EPA ID#	Estimated Number of Employees to be Present at Site				
Description of Site					
County Name	Municipality	City	Boro	Twp	State
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
County Name	Municipality	City	Boro	Twp	State
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Site Location Line 1		Site Location Line 2			
Site Location Last Line - City		State	ZIP+4		
Detailed Written Directions to Site					

Site Contact Last Name	First Name	MI	Suffix	
Site Contact Title	Site Contact Firm			
Mailing Address Line 1	Mailing Address Line 2			
Address Last Line - City	State	ZIP+4		
Phone	Ext	FAX	E-mail Address	
NAICS Codes (Two- & Three-Digit Codes - List All That Apply)			6-Digit Code (Optional)	
Site to Client Relationship				

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner Identified in Section II; Identified below.

Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1	Mailing Address Line 2			
Address Last Line - City	State	ZIP+4	Country	
Property Owner Contact Last Name	First Name	MI	Suffix	
Property Owner Contact Title	Phone	Ext		
E-mail Address	FAX			

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State ZIP+4				
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	-or-	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	-or-	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number	Inch(es)		=	Feet		
	Centimeter(s)		=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that issued the Permit						

FACILITY OPERATOR INFORMATION

Same as Owner identified in Section II.
 Different than Owner Identified in Section II; identified below.

DEP Client ID#	Client Type / Code			
Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1	Mailing Address Line 2			
Address Last Line - City	State	ZIP+4	Country	
Client Contact Last Name	First Name	MI	Suffix	
Client Contact Title	Phone		Ext	
E-mail Address	FAX			

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
 Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name

Employer ID# (EIN) or SSN

Mailing Address Line 1

Mailing Address Line 2

Address Last Line - City

State

ZIP+4

Previous Facility ID#

DATE OF SALE/TRANSFER

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No NA

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name

Previous Owner Signature

Title

Date

Facility ID# 51-33620

Facility Name Phda Ref Point Breaze

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.

Status Codes: C-Currently in Use T-Temporarily Out of Use E-Exempt
 Type Codes: M-Manufactured F-Field Constructed R-Removed P-Closed In Place

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) (If Other Petroleum Substance or Petroleum Based Mixture) (Crude Oil)	CAS# (If Hazardous Substance)	Exempt Reference Code
058A	T	R	F	01/01/1974	11/01/2021	13,158,800				
A										
A										
A										
A										
A										
A										
A										
A										

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer: Model:							
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (inner) Piping Manufacturer:							
Model:							
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:							
Model:							
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility Name: Phila Ref Point Breeze
Facility ID# 51-33620

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain, _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain, _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33520

Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an in the appropriate box for each tank that was removed or closed in place.

Items 2 & 3 below apply to large ASTs and all USTs	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	058A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements.

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

Owner Signature  President Title 12/16/2021 Date

Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
2250 East Adams Avenue				
Address Last Line - City		State	ZIP+4	Country
Philadelphia		PA	19124	USA
Contact Title		Phone		Ext.
President		610-636-4574		
E-mail Address				
Gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
058A	Kristian Satterthwaite		5081	AFR	1567	<i>Kristian Satterthwaite</i>	11/22/2019

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications, that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards, and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



December 14, 2021

VIA EMAIL (ELECTRONIC SUBMISSION)

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33620 - Point Breeze Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is attaching the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tanks Registration/Permitting Application Form for the removal of the following aboveground storage tank (AST):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	040A	PB 191	P-546	11/23/2021

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,
JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:we
Attachment

cc: REPSG

**STORAGE TANKS REGISTRATION / PERMITTING
 APPLICATION FORM**

Before completing this form, read the step-by-step instructions provided in this application package.

51-33920 Facility ID # Phila Ref Point Breeze Facility Name	DEP USE ONLY
	Client ID#
	Site ID#
	Account #
	Auth ID#
	APB ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL
INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tank(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

-
- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name	Employer ID# (EIN)	Dun & Bradstreet ID#		
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1	Mailing Address Line 2			
3144 West Passyunk Avenue				
Address Last Line - City	State	ZIP+4	Country	
Philadelphia	PA	19145	USA	
Client Contact Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr	
Client Contact Title	Phone	Ext		
President	610-636-4574			
E-mail Address				FAX
Gbowman@northstar.com				

III. SITE INFORMATION

DEP Site ID#	Site Name				
EPA ID#	Estimated Number of Employees to be Present at Site				
Description of Site					
County Name	Municipality	City	Boro	Twp	State
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
County Name	Municipality	City	Boro	Twp	State
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Site Location Line 1		Site Location Line 2			
Site Location Last Line - City		State	ZIP+4		
Detailed Written Directions to Site					

Site Contact Last Name	First Name	MI	Suffix	
Site Contact Title	Site Contact Firm			
Mailing Address Line 1	Mailing Address Line 2			
Address Last Line - City	State	ZIP+4		
Phone	Ext	FAX	E-mail Address	
NAICS Codes (Two- & Three-Digit Codes - List All That Apply)			6-Digit Code (Optional)	
Site to Client Relationship				

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Individual Last Name	First Name	MI	Suffix	SSN
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1	Mailing Address Line 2			
Address Last Line - City	State	ZIP+4	Country	
Property Owner Contact Last Name	First Name	MI	Suffix	
Property Owner Contact Title	Phone		Ext	
E-mail Address	FAX			

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State ZIP+4				
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	-or-	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	-or-	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
	-or-	Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner identified in Section II.		<input type="checkbox"/> Different than Owner identified in Section II; Identified below.			
DEP Client ID#	Client Type / Code				
Organization Name or Registered Fictitious Name	Employer ID# (EIN)		Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN	
Additional Individual Last Name	First Name	MI	Suffix	SSN	
Mailing Address Line 1	Mailing Address Line 2				
Address Last Line - City	State	ZIP+4	Country		
Client Contact Last Name	First Name	MI	Suffix		
Client Contact Title	Phone		Ext		
E-mail Address	FAX				

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
 Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client Information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name _____

Employer ID# (EIN) or SSN _____

Mailing Address Line 1 _____

Mailing Address Line 2 _____

Address Last Line - City _____

State _____

ZIP+4 _____

Previous Facility ID# _____

DATE OF SALE/TRANSFER

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name _____

Previous Owner Signature _____

Title _____

Date _____

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.

Status Codes: C-Currently in Use
Type Codes: M-Manufactured

T-Temporarily Out of Use
F-Field Constructed

E-Exempt

R-Removed

P-Closed In Place

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	GERCLA Name (If Hazardous Substance) (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code
040A	T	R	F	01/01/1958	11/23/2021	634,200	Recovered Oil			
A										
A										
A										
A										
A										
A										
A										
A										

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	GERCLA Name (If Hazardous Substance) (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer: Model:							
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection - Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:							
Model:							
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection - Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:							
Model:							
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620 Facility Name Phifa Ref Point BreezB

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# S1-3362D

Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an in the appropriate box for each tank that was removed or closed in place.

Items 2 & 3 below apply to large ASTs and all USTs	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	040A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

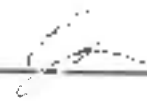
IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

Owner Signature  President Title 12/16/2021 Date

Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
2250 East Adams Avenue				
Address Last Line - City		State	ZIP+4	Country
Philadelphia		PA	19124	USA
Contact Title		Phone		Ext.
President		610-636-4574		
E-mail Address				
Gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
040 A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	11/17

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP-Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 27,000 gallons listed in Section VI. (Type or Print legibly) A DEP-Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications, that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



December 14, 2021

VIA EMAIL (ELECTRONIC SUBMISSION)

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33620 - Point Breeze Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is attaching the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tanks Registration/Permitting Application Form for the removal of the following aboveground storage tank (AST):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	057A	PB 883	P-601	11/24/2021

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,
JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:wc
Attachment

cc: REPSG



STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

51-33620 Facility ID # Phila Ref Point Breeze Facility Name	DEP USE ONLY
	Client ID#
	Site ID#
	Account #
	Auth ID#
	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tanks(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)			
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt	
Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#	
Philadelphia Energy Solutions Refining and Marketing, LLC					
Individual Last Name	First Name	MI	Suffix	SSN	
Bowman	Gary	P.	Sr.		
Additional Individual Last Name	First Name	MI	Suffix	SSN	
Mailing Address Line 1		Mailing Address Line 2			
3144 West Passyunk Avenue					
Address Last Line – City	State	ZIP+4	Country		
Philadelphia	PA	19145	USA		
Client Contact Last Name	First Name	MI	Suffix		
Bowman	Gary	P.	Sr.		
Client Contact Title	Phone		Ext		
President	610-636-4574				
E-mail Address	FAX				
Gbowman@northstar.com					

III. SITE INFORMATION

DEP Site ID#	Site Name				
EPA ID#	Estimated Number of Employees to be Present at Site				
Description of Site					
County Name	Municipality	City <input type="checkbox"/>	Boro <input type="checkbox"/>	Twp <input type="checkbox"/>	State
County Name	Municipality	City <input type="checkbox"/>	Boro <input type="checkbox"/>	Twp <input type="checkbox"/>	State
Site Location Line 1		Site Location Line 2			
Site Location Last Line – City		State	ZIP+4		
Detailed Written Directions to Site					
Site Contact Last Name		First Name	MI	Suffix	
Site Contact Title		Site Contact Firm			
Mailing Address Line 1		Mailing Address Line 2			
Address Last Line – City		State	ZIP+4		
Phone	Ext	FAX	E-mail Address		
NAICS Codes (Two- & Three-Digit Codes – List All That Apply)			6-Digit Code (Optional)		
Site to Client Relationship					

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Individual Last Name	First Name	MI	Suffix	SSN
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
Address Last Line – City		State	ZIP+4	Country
Property Owner Contact Last Name		First Name	MI	Suffix
Property Owner Contact Title		Phone	Ext	
E-mail Address			FAX	

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State	ZIP+4			
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	--or--	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	--or--	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
	--or--	Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that Issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.				
DEP Client ID#	Client Type / Code					
Organization Name or Registered Fictitious Name			Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1		Mailing Address Line 2				
Address Last Line - City	State	ZIP+4	Country			
Client Contact Last Name	First Name	MI	Suffix			
Client Contact Title		Phone	Ext			
E-mail Address			FAX			

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
- Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name _____
Employer ID# (EIN) or SSN _____
Mailing Address Line 1 _____
Mailing Address Line 2 _____
Address Last Line - City _____ State _____ ZIP+4 _____
Previous Facility ID# _____

DATE OF SALE/TRANSFER	_____
-----------------------	-------

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name _____

Previous Owner Signature Title Date

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.

Status Codes: C-Currently in Use T-Temporarily Out of Use E-Exempt R-Removed P-Closed In Place
Type Codes: M-Manufactured F-Field Constructed

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code
057A	C	R	F	01/01/1961	11/24/2021	8,568,600		Crude Oil		
A										
A										
A										
A										
A										
A										
A										
A										

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) Substance Name (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The **DEP Certified Installer** should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Tank Manufacturer:						
Model:						
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X. Molded Plastic Form (Double Wall) (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection – Single/Inner Wall (28)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Primary (Inner) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
Secondary (Outer) Piping Manufacturer:						
Model:						
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620 Facility Name Phila Ref Point Breeze

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (16) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight – Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an ☒ in the appropriate box for each tank that was removed or closed in place.

<i>Items 2 & 3 below apply to large ASTs and all USTs</i>	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	057A					
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name **Gary Bowman**

	President	12/16/2021
Owner Signature	Title	Date

Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
2250 East Adams Avenue				
Address Last Line – City	State	ZIP+4	Country	
Philadelphia	PA	19124	USA	
Contact Title	Phone		Ext.	
President	610-636-4574			
E-mail Address				
Gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
057A	Kristian Satterthwaite		5081	AFR	1557	<i>Kristian Satterthwaite</i>	12/7/2021

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI. (Type or Print legibly) A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



December 14, 2021

VIA EMAIL/ELECTRONIC SUBMISSION

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33620 - Point Breeze Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is attaching the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tanks Registration/Permitting Application Form for the removal of the following aboveground storage tank (AST):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Point Breeze Refinery	51-33620	047A	PR 823	P-576	12/31/2021

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,
JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:wc
Attachment

cc: REPSG



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

51-33620 Facility ID # Phila Ref Point Breeze Facility Name	DEP USE ONLY
	Client ID#
	Site ID#
	Account #
	Auth ID#
	APS ID#
	Master Auth ID#

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tank(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2630-PM-BECB0514a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID# 298341	Client Type/Code	Fee Kind (check one if applicable)		
		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name Philadelphia Energy Solutions Refining and Marketing, LLC	Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name Bowman	First Name Gary	MI P.	Suffix Sr	SSN
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1 3144 West Passyunk Avenue	Mailing Address Line 2			
Address Last Line - City Philadelphia	State PA	ZIP+4 19145	Country USA	
Client Contact Last Name Bowman	First Name Gary	MI P.	Suffix Sr.	
Client Contact Title President	Phone 610-636-4574	Ext		
E-mail Address Gbowman@northstar.com	FAX			

II). SITE INFORMATION

DEP Site ID#	Site Name					
EPA ID#	Estimated Number of Employees to be Present at Site					
Description of Site						
County Name	Municipality	City	Boro	Twp	State	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
County Name	Municipality	City	Boro	Twp	State	
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Site Location Line 1			Site Location Line 2			
Site Location Last Line - City		State	ZIP+4			
Detailed Written Directions to Site						

Site Contact Last Name	First Name	MI	Suffix			
Site Contact Title		Site Contact Firm				
Mailing Address Line 1			Mailing Address Line 2			
Address Last Line - City		State	ZIP+4			
Phone	Ext	FAX	E-mail Address			
NAICS Codes (Two- & Three-Digit Codes - List All That Apply)					6-Digit Code (Optional)	
Site to Client Relationship						

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II. Different than Tank Owner Identified in Section II; identified below.

Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#			
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1			Mailing Address Line 2			
Address Last Line - City		State	ZIP+4	Country		
Property Owner Contact Last Name	First Name	MI	Suffix			
Property Owner Contact Title		Phone	Ext			
E-mail Address			FAX			

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State ZIP+4				
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
Horizontal Accuracy Measure	Feet	-or-	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	-or-	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Date Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
	-or-	Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.				
DEP Client ID#	Client Type / Code					
Organization Name or Registered Fictitious Name	Employer ID# (EIN)		Dun & Bradstreet ID#			
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1	Mailing Address Line 2					
Address Last Line - City	State	ZIP+4	Country			
Client Contact Last Name	First Name	MI	Suffix			
Client Contact Title	Phone		Ext			
E-mail Address	FAX					

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
 Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client Information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name

Employer ID# (EIN) or SSN

Mailing Address Line 1

Mailing Address Line 2

Address Last Line - City

State

ZIP+4

Previous Facility ID#

DATE OF SALE/TRANSFER

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name

Previous Owner Signature

Title

Date

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.

Status Codes: C-Currently in Use T-Temporarily Out of Use E-Exempt R-Removed P-Closed In Place
 Type Codes: M-Manufactured F-Field Constructed

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tanks	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code
047A	T	R	F	01/01/1941	12/03/2021	5,846,400		Low Sulfur Diesel		
A										
A										
A										
A										
A										
A										
A										

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tanks	Prev Status	New Status	Type	Install Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) (If Other Petroleum Substance or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID# 51-33620

Facility Name Phill's Ref Point Breeze

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (?)	Tank Manufacturer:						
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M. Double Bottom (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. Molded Plastic Form (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Molded Plastic Form (Double Wall) (ASTs Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Underground Piping Construction & Corrosion Protection - Single/Inner Wall (28)	Tank #		Tank #		Tank #		Tank #		Tank #	
Primary (Inner) Piping Manufacturer: Model:										
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection - Outer Wall (29)	Tank #		Tank #		Tank #		Tank #		Tank #	
Secondary (Outer) Piping Manufacturer: Model:										
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620 Facility Name Philadelphia Ref Point Grease

Aboveground Piping Construction & Corrosion Protection (3)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic: Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name: Pika Ref Point Breaza

	Overfill Prevention (17)							
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. FIM in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Emergency Containment (16) ASTs only							
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Secondary Containment (17) Single Wall ASTs only							
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Stage I Vapor Recovery (19) USTs and ASTs when applicable							
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Port	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

Tank-top Containment Sumps Present (Product Piping Only) (21) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some penetrations and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. None - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33620

Facility Name Phila Ref Point Breeze

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an in the appropriate box for each tank that was removed or closed in place.

Items 2 & 3 below apply to large ASTs and all USTs	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	047A						
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

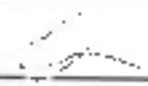
IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, all applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been obtained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 P.S. § 4904, Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

 Owner Signature	President Title	12/16/2021 Date
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Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
2250 East Adams Avenue				
Address Last Line - City		State	ZIP+4	Country
Philadelphia		PA	19124	USA
Contact Title		Phone		Ext.
President		610-636-4574		
E-mail Address				
Gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler(s) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certifications#	Certification Category	Company Certification#	Installer/Remover Signature	Date
DATA	Kristian Satterthwaite	API 650	9091	AFR	1557	<i>Kristian Satterthwaite</i>	11/17/22

XI. INSPECTOR CERTIFICATION

This section must be completed by the DEP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI (Type or Print legibly). A DEP Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards, and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 PA C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certifications#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box.

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



December 14, 2021

VIA EMAIL/ELECTRONIC SUBMISSION

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tanks Registration/Permitting Application Form
PADEP Facility ID #51-33624 - Girard Point Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is attaching the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tanks Registration/Permitting Application Form for the removal of the following aboveground storage tank (AST):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	Removal Date
Girard Point Refinery	51-33624	015A	GP 225	P-146	11/15/2021

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,

JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:wc
Attachment

cc: REPSG



STORAGE TANKS REGISTRATION / PERMITTING APPLICATION FORM

Before completing this form, read the step-by-step instructions provided in this application package.

51-33624 Facility ID # Phila Ref Girard Point Facility Name	DEP USE ONLY Client ID# Site ID# Account # Auth ID# APB ID# Master Auth ID#
--	--

I. PURPOSE OF SUBMITTAL

INITIAL (Applies to First-Time Facility Registration)

- | | |
|---|--|
| <input type="checkbox"/> Register Tank(s) to be Used* | <input type="checkbox"/> Register Tank(s) to be Temporarily Out of Use |
| <input type="checkbox"/> Register Tank(s) to be Removed | <input type="checkbox"/> Register Tank(s) to be Closed in Place |

AMENDED (Applies to Currently Registered Tank(s) or Existing Facility)

- | | |
|--|---|
| <input type="checkbox"/> Changed Owner Information | <input type="checkbox"/> Changed Contact Information |
| <input type="checkbox"/> Changed Facility Information | <input type="checkbox"/> Changed Facility Operator Information |
| <input type="checkbox"/> Changed to Currently In Use Tank(s)* | <input type="checkbox"/> Added Tank(s) to Existing Facility* |
| <input type="checkbox"/> Changed to Temporarily Out of Use Tank(s) | <input checked="" type="checkbox"/> Changed to Permanently Closed Tank(s)/Removed |
| <input type="checkbox"/> Changed Product | <input type="checkbox"/> Changed to Exempt Tank(s) |

CHANGE OF OWNERSHIP

- Tanks Changed Ownership and Remain at Same Facility*

* For Underground Storage Tanks (UST), attach the UST Operator Training Documentation Form (2530-PM-BECB0814a) and copies of the Class A and Class B operator training certificates.

II. CURRENT OR NEW TANK OWNER / CLIENT INFORMATION

DEP Client ID#	Client Type/Code	Fee Kind (check one if applicable)		
298341		<input type="checkbox"/> Volunteer Fire Co/EMS Org	<input type="checkbox"/> State Govt	<input type="checkbox"/> Fed Govt
Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#	
Philadelphia Energy Solutions Refining and Marketing, LLC				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
3144 West Passyunk Avenue				
Address Last Line - City	State	ZIP+4	Country	
Philadelphia	PA	19145	USA	
Client Contact Last Name	First Name	MI	Suffix	
Bowman	Gary	P.	Sr.	
Client Contact Title	Phone	Ext		
President	610-636-4574			
E-mail Address				FAX
Gbowman@norhtar.com				

III. SITE INFORMATION

DEP Site ID#	Site Name				
EPA ID#	Estimated Number of Employees to be Present at Site				
Description of Site					
County Name	Municipality	City	Boro	Twp	State
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
County Name	Municipality	City	Boro	Twp	State
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Site Location Line 1		Site Location Line 2			
Site Location Last Line - City		State	ZIP+4		
Detailed Written Directions to Site					

Site Contact Last Name	First Name	MI	Suffix		
Site Contact Title		Site Contact Firm			
Mailing Address Line 1		Mailing Address Line 2			
Address Last Line - City		State	ZIP+4		
Phone	Ext	FAX	E-mail Address		
NAICS Codes (Two- & Three-Digit Codes - List All That Apply)				6-Digit Code (Optional)	
Site to Client Relationship					

IIIa. PROPERTY OWNER INFORMATION

Same as Tank Owner Identified in Section II Different than Tank Owner Identified in Section II; Identified below.

Organization Name or Registered Fictitious Name		Employer ID# (EIN)	Dun & Bradstreet ID#		
Individual Last Name	First Name	MI	Suffix	SSN	
Additional Individual Last Name	First Name	MI	Suffix	SSN	
Mailing Address Line 1		Mailing Address Line 2			
Address Last Line - City		State	ZIP+4	Country	
Property Owner Contact Last Name	First Name	MI	Suffix		
Property Owner Contact Title		Phone	Ext		
E-mail Address			FAX		

IV. FACILITY INFORMATION

DEP Storage Tank Facility ID#	Facility Name	Facility Kind				
Facility Location Line 1 (if different than Site Location)		Facility Location Line 2				
Facility Location Last Line - City		State ZIP+4				
Latitude/Longitude Point of Origin	Latitude			Longitude		
	Degree	Minutes	Seconds	Degree	Minutes	Seconds
Horizontal Accuracy Measure	Feet	--or--	Meters			
Horizontal Reference Datum Code	<input type="checkbox"/> North American Datum of 1927 <input type="checkbox"/> North American Datum of 1983 <input type="checkbox"/> World Geodetic System of 1984					
Horizontal Collection Method Code						
Reference Point Code						
Altitude	Feet	--or--	Meters			
Altitude Datum Name	<input type="checkbox"/> The National Geodetic Vertical Datum of 1929 <input type="checkbox"/> The North American Vertical Datum of 1988 (NAVD88)					
Altitude (Vertical) Location Datum Collection Method Code						
Geometric Type Code						
Data Collection Date						
Source Map Scale Number		Inch(es)	=	Feet		
	--or--	Centimeter(s)	=	Meters		
Flammable & Combustible Liquid Permit # (if applicable)						
State or Municipality that issued the Permit						

FACILITY OPERATOR INFORMATION

<input type="checkbox"/> Same as Owner Identified in Section II.		<input type="checkbox"/> Different than Owner Identified in Section II; identified below.				
DEP Client ID#	Client Type / Code					
Organization Name or Registered Fictitious Name	Employer ID# (EIN)		Dun & Bradstreet ID#			
Individual Last Name	First Name	MI	Suffix	SSN		
Additional Individual Last Name	First Name	MI	Suffix	SSN		
Mailing Address Line 1	Mailing Address Line 2					
Address Last Line - City	State	ZIP+4	Country			
Client Contact Last Name	First Name	MI	Suffix			
Client Contact Title	Phone		Ext			
E-mail Address	FAX					

V. CHANGE OF OWNERSHIP INFORMATION

- All Tanks Changed Ownership at the Facility
 Some Tanks Changed Ownership at the Facility (List all applicable tank numbers in Section VI.)

OWNERSHIP CHANGE TO - Client information is noted in Section II.

OWNERSHIP CHANGE FROM (previous owner information)

Name

Employer ID# (EIN) or SSN

Mailing Address Line 1

Mailing Address Line 2

Address Last Line - City

State

ZIP+4

Previous Facility ID#

DATE OF SALE/TRANSFER

SIGNATURE & CERTIFICATION OF PREVIOUS OWNER

Previous owner's signature is not available. As required, the "new" owner has attached a deed of transfer or other proof of ownership to this application. Yes No N/A

I have reviewed this form for submission to the Department. I certify under penalty of law as provided in 18 PA. C.S.A. §4903 (relating to false swearing) and 18 PA. C.S.A. §4904 (relating to unsworn falsification to authorities), that I have the authority to sign this Section for the transfer of permit or registration for the storage tanks listed herein. Further, I certify that all information provided in Section V is true, accurate and complete to the best of my knowledge and belief.

Type or Print Previous Owner Name

Previous Owner Signature

Title

Date

Facility ID# 51-33624 Facility Name Phila Ref Grand Point

VI. STORAGE DESCRIPTION

Type or print legibly each regulated storage tank at this facility under your ownership.
 Status Codes: C-Currently in Use T-Temporarily Out of Use E-Exempt R-Removed P-Closed In Place
 Type Codes: M-Manufactured F-Fuel Constructed

A. ABOVEGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Instal Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) (If Other Petroleum Substances or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code
015A	T	R	F	01/01/1973	11/15/2021	3,360,000		Light Cycle Oil		
A										
A										
A										
A										
A										
A										
A										
A										

B. UNDERGROUND TANKS. List all new tanks. If amending information, list only those tanks being amended. Copy this page if more lines are needed.

Tank#	Prev Status	New Status	Type	Instal Date (Mo/Day/Yr)	Change of Status Date (Mo/Day/Yr)	Capacity (Gallons)	Substance Code (Currently or Last Stored)	CERCLA Name (If Hazardous Substance) (If Other Petroleum Substances or Petroleum Based Mixture)	CAS# (If Hazardous Substance)	Exempt Reference Code

Facility ID# 51-33624

Facility Name Phila Fed Girard Port

VII. ABOVEGROUND & UNDERGROUND NEW TANK INSTALLATION INFORMATION

The DEP Certified Installer should complete this section. New tanks listed in Section VI must also be listed in this Section. Write the Tank Number(s) and place an in the appropriate box for each component that was installed.

Tank Construction & Corrosion Protection (1)	Tank Manufacturer:							
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Unprotected Steel (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Cathodically Protected Steel (Impressed Current)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Unprotected Steel (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fiberglass (Single Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. Fiberglass (Double Wall)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. Steel w/Plastic or Fiberglass Jacket or Double Wall Act 100	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H. Steel With FRP Coating (Act 100 or Equivalent)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Steel with Lined Interior	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Concrete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Cathodically Protected Double Wall Steel (Galvanic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Cathodically Protected Steel with Liner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M. Double Bottom (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. Molded Plastic Form (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
P. Aluminum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q. Fire Protected Double Wall AST	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R. Steel with Plastic or Fiberglass Jacket or Double Wall Act 100 with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Steel with FRP Coating (Act 100 or Equivalent) with Anodes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T. Molded Plastic Form (Double Wall) (AST's Only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33624

Facility Name Phila Ref Guard Point

Underground Piping Construction & Corrosion Protection – Stringer/Inner Wall (28)	Primary (Inner) Piping Manufacturer Model:					
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Underground Piping Construction & Corrosion Protection – Outer Wall (29)	Secondary (Outer) Piping Manufacturer Model:					
	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
A. Bare Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. No Dispensing Piping	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Poly-encased Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33624 Facility Name Phila Ref/Gas/rd Point

Aboveground Piping Construction & Corrosion Protection (3)	Tank #							
A. Carbon Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Cathodically Protected Metallic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Copper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Single Wall Fiberglass	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Single Wall Flexible (Non-Metallic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F. PVC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I. Double Wall - Metallic Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J. Double Wall - Rigid (FRP) Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K. Double Wall - Flexible Primary	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L. Stainless Steel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
99. Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Product Delivery System (4)	Tank #							
A. Suction: Check valve at pump	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Suction: Check valve at tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Pressure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Gravity fed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Spill Prevention (6)	Tank #							
S. Permanently installed and liquid tight (single-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Permanently installed and liquid tight (double-walled)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33624

Facility Name Phila Ref Girard Point

Overfill Prevention (7)	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	A. Overfill alarm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E. Fill in less than 25 gallons (exempt)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None (AST only)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S. Drop tube shutoff device	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (AST only) Type: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Emergency Containment (18) ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes (Includes double-walled tanks with required appurtenances)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Secondary Containment (17) Single Wall ASTs only	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	N. No - Explain: _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V. Underground vault	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Stage I Vapor Recovery (19) USTs and ASTs when applicable	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	A. Coaxial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. 2 Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N. None or incomplete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 5-1-33624

Facility Name Phda Ref Girard Point

Tank-top Containment Sump Present (Product Piping Only) (21) USTs only		Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None - Explain: _____	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
S. At some penetrations and liquid tight - Explain: _____	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>
A. At all penetrations and liquid tight	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

Under-dispenser Containment Present (22) USTs only		Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. None - Explain: _____	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
S. At some dispensers and liquid tight - Explain: _____	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
A. Under all dispensers and liquid tight	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Line Leak Detector Shuts Off Pump (23) USTs only		Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>

Tank Supplies Emergency Generator (25)		Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
N. No	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
Y. Yes	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Facility ID# 51-33624

Facility Name Phila Ref Girard Point

VIII. ABOVEGROUND & UNDERGROUND TANK INFORMATION FOR PERMANENT CLOSURE

Write the Tank Number(s) and place an in the appropriate box for each tank that was removed or closed in place.

Items 2 & 3 below apply to large ASTs and all USTs	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #	Tank #
	015A						
1. Contamination suspected or observed and notification of contamination form was submitted to the appropriate DEP regional office.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Closure document submitted to the appropriate DEP regional office.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Closure document kept on file by owner.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>


IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. This registration is conditioned upon compliance with provisions of the Storage Tank and Spill Prevention Act of 1989, as applicable regulations, and with the requirements for obtaining and maintaining a permit required under this Act. I certify my responsibility for assuring the following permit requirements:

- Storage tank systems are in compliance with applicable administrative, technical and operational requirements as specified in Subchapter E for underground tanks or Subchapter F or G for aboveground tanks.
- Tank handling and inspection activities are performed by an individual possessing DEP certification in the appropriate category as required in Subchapters A and B.
- Underground storage tanks meet the applicable financial responsibility requirements of Subchapter H (relating to financial responsibility requirements).
- A Spill Prevention Response (SPR) Plan must be submitted to the appropriate DEP regional office for facilities that have aboveground storage tanks where the total capacity of all aboveground tanks is greater than 21,000 gallons.
- Other state and local permits required for operation of the tank system have been attained.

My signature represents to the Department that I own the storage tank(s) and am aware of the responsibilities and potential liabilities as an "owner" arising under the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I am also advised that statements made on this registration is made subject to the penalties of 18 PA. C.S.A. Section 4904 relating to unsworn falsification to authorities.

Type or Print Owner Name Gary Bowman

	President	12/16/2021
Owner Signature	Title	Date

Information & Invoices should be sent to:

- Tank Owner Contact
- Site Contact
- Facility Operator
- Other Responsible Party Identified Below

Organization Name or Registered Fictitious Name		Employer ID# (EIN)		Dun & Bradstreet ID#
NorthStar Contracting Group, Inc.				
Individual Last Name	First Name	MI	Suffix	SSN
Bowman	Gary	P.	Sr.	
Additional Individual Last Name	First Name	MI	Suffix	SSN
Mailing Address Line 1		Mailing Address Line 2		
2250 East Adams Avenue				
Address Last Line - City		State	ZIP+4	Country
Philadelphia		PA	19124	USA
Contact Title		Phone		Ext.
President		610-636-4574		
E-mail Address				
Gbowman@northstar.com				
Client to Site (Facility) Relationship				

X. INSTALLER / REMOVER CERTIFICATION

This section must be completed by the certified tank handler (B) who is responsible for the installation or removal from service of the aboveground and underground storage tank systems listed in Section VI. Tank modification activity must be submitted on a "Tank Modification Report" form.

SIGNATURE & CERTIFICATION OF INSTALLER(S) / REMOVER(S)

As the certified tank handler responsible for the tank handling activities in the category or categories listed, I certify that all tank handling activities were conducted in compliance with the design, installation and operation standards of the Storage Tank and Spill Prevention Act of 1989 and all applicable regulations. I also certify, under penalty of law as provided in 18 P.A.C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided therein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Installer/Remover Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Installer/Remover Signature	Date
019A	Kristian Satterthwaite		5081	AFR	1557	<i>[Signature]</i>	<i>[Date]</i>

XI. INSPECTOR CERTIFICATION

This section must be completed by the DCP Certified Tank Inspector(s) who is responsible for verifying the installation standards for field constructed tanks and aboveground tanks greater than 21,000 gallons listed in Section VI, (Type or Port legibly). A DCP-Certified Inspector may also be responsible for inspecting existing ASTs which are entering regulated service for the first time with no tank handling activities.

SIGNATURE & CERTIFICATION OF INSPECTOR(S)

As the certified tank inspector responsible for verifying tank handling activities and construction standards, I certify that the tank(s) listed below are constructed to appropriate industry standards and, if applicable, to manufacturer's specifications; that the tank(s) have been tested as required by industry standards; and that the tank(s) meet or exceed applicable design and operating standards; and are in compliance with the requirements of the Storage Tank and Spill Prevention Act of 1989, and all applicable regulations. I also certify under penalty of law as provided in 18 P.A.C.S.A. 4904 (relating to unsworn falsification to authorities), that the information provided herein is true, accurate and complete to the best of my knowledge and belief.

Tank#	Inspector Name	Construction Standard	Individual Certification#	Certification Category	Company Certification#	Inspector Signature	Date

XII. SITE SPECIFIC INSTALLATION PERMIT NUMBER

If a site-specific permit was required for a new tank installation, write the tank number(s) and permit number(s) in the appropriate box

Site-Specific Installation Permit	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#	Tank#



November 23, 2021

VIA EMAIL (ELECTRONIC SUBMISSION)

Pennsylvania Department of Environmental Protection
Central Office - Division of Storage Tanks
Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17101

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC (PES)
PADEP Storage Tank Registration Amendment Form - Change to "T" Status
PADEP Facility ID #51-33624 - Girard Point Refinery**

Dear PADEP:

On behalf of our client, JD2 Environmental, Inc. (JD2) is enclosing the Pennsylvania Department of Environmental Protection's (PADEP's) Storage Tank Registration Amendment Form to change the status to 'Temporarily Out-of-Use' for the following aboveground storage tank (AST):

Facility Name	PADEP Facility ID #	PADEP Tank ID #	Owner Tank ID #	AMS Tank ID #	TOOU Date
Girard Point Refinery	51-33624	066A	GP 973	N/A	11/15/2021

The tank was taken out of service in accordance with the applicable parts of 25 PA Code Sections 245.562 and 245.617, which included completely emptying the contents from the tank, visual examination of the area surrounding the tank, securing the tank against unauthorized entry and all piping entering or exiting the tank were capped or blinded. As allowed under 25 PA Code Section 245.562(e), In-Service and Out-of-Service inspection intervals will be delayed for the above tank. The delayed inspections shall be conducted prior to placing regulated substance in the tank and return the tank to operating status.

If you have any questions regarding this submittal, please do not hesitate to contact me at (610) 430-8151.

Sincerely yours,
JD2 ENVIRONMENTAL, INC.

Kristian Satterthwaite
Environmental Scientist
PADEP Inspector #5081

KS:we
Attachment

cc: REPSG

Appendix F

Tank Closure Reports





COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF ENVIRONMENTAL CLEANUP AND BROWNFIELDS

ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

51-33620
Facility I.D.

Former Philadelphia Refinery Point Breeze - Tank Group 4
Facility Name

Philadelphia Philadelphia
Municipality County

January 17, 2023
Date Prepared

Kevin L. Long
Name of Person Submitting Report
(Please Print)

Terraphase Engineering
Company Name
(If Applicable)

Principal Consultant
Title

Closure Method (Check all that apply):

- AST Removal
- AST Closure-In-Place
- AST Change-In-Service

Site Assessment Results (Check all that apply):

- No Obvious Contamination - Sample Results Meet Standards/Levels
- No Obvious Contamination - Sample Results Do Not Meet Standards/Levels
- Obvious, Localized Contamination - Sample Results Meet Standards/Levels
- Obvious, Localized Contamination - Sample Results Do Not Meet Standards/Levels
- Obvious, Extensive Contamination

CLOSURE METHOD(s):		DEP Tank ID Number:				
Partial Storage Tank System Closure			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tank <input type="checkbox"/> N/A	a. Removal		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. Closure-in-Place		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Change-in-Service		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Piping <input type="checkbox"/> N/A	a. Removal		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. Closure-in-Place		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Change-in-Service		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dispenser <input type="checkbox"/> N/A	a. Removal		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. Closure-in-Place		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Change-in-Service		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	a. Removal		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b. Closure-in-Place		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	c. Change-in-Service		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Describe Closure Activities:

The tanks were drained via the in-place piping systems. Associated piping was also drained. Residual product was retained for use in other areas of the Former Philadelphia Refinery Complex. The interiors of tanks were cleaned. The tanks and piping were dismantled and removed from the site for disposal. When encountered, double bottoms were excavated and removed at a later date.

Yes N/A

11. Briefly describe the storage tank facility and the nature of the operations which were conducted at the facility (both historical and present) **including use of the storage tank systems:**

Tank Group 04 was located in the east-central portion of the Former Philadelphia Refinery Complex.

The tanks in the group held a variety of materials associated with the petroleum refining process.

12. A site location and sampling map of the site, drawn to scale, is attached. See page 11 of 11.
13. Original, color photographs of the closure process involving any excavation are attached (i.e., inside of excavation/piping runs, pit water, containment structure and foundation showing condition).
14. An amended "Storage Tanks Registration/Permitting Application" Form was submitted to the DEP, Bureau of Environmental Cleanup and Brownfields, Division of Storage Tanks, P.O. Box 8762, Harrisburg, PA 17105-8762.

Date: 5 / 20 / 2021

15. If a release was confirmed, the appropriate regional office of DEP was notified by the owner or operator.

Date: 8 / 10 / 2022

Office: Southeast

Yes N/A

16. If tanks were cleaned on-site:
- a. Briefly describe the disposition of usable product: Usable product was drained from the tanks prior to cleaning. Any residual product was discharged to the on-site process sewer and wastewater treatment system.

 - b. Briefly describe the disposal of unusable product, sludges, sediments, and wastewater generated during cleaning. Provide the name and permit number of the processing, treatment, storage or disposal facility. (Attach documentation of proper disposal):
All sludges from Tank Group 04 were stabilized for transport and loaded into intermodal containers and then loaded onto rail cars. Each rail car was loaded with 6 intermodal containers of stabilized sludge, placarded, a BOL and way bill completed for each container and then transported by rail to Chemical Waste Management Inc at 7170 John Brannon Road, Sulphur, LA 70665. Remaining waste was discharged to the facility process sewer and wastewater treatment system.
 - c. If tank contents were determined/deemed to be hazardous waste, provide:
 - (1) Generator ID Number: PAD 04979109
 - (2) Licensed Hazardous Waste Transporter Name and ID Number: LA 0000777201, LA 000147272

17. If tanks were removed from the site for cleaning:
- a. Provide the name and permit number of the processing, treatment, storage or disposal facility performing the tank cleaning:

 - b. If tank contents were determined/deemed to be hazardous waste, provide:
 - (1) Generator ID Number: _____
 - (2) Licensed Hazardous Waste Transporter Name and ID Number: _____

18. Briefly describe the disposition of tanks/piping (Attach documentation of proper disposal):
All tanks, associated piping were cleaned, demolished and recycled for scrap value.

19. If contaminated soil is excavated:
- a. Briefly describe the disposition and amount _____ (tons) of contaminated soil. Provide the name and permit number of the processing, treatment, storage or disposal facility. (Attach documentation of proper disposal):

b. If contaminated soil is determined/deemed to be hazardous waste, provide:

(1) Generator ID Number: _____

(2) Licensed Hazardous Waste Transporter Name and ID Number: _____

Yes N/A

20. Briefly describe the disposition of and amount _____ (tons) of uncontaminated soil and debris (attach analyses):

21. If the tanks were "Closed-in-Place" provide information below:

a. Briefly describe the tank cleaning process: _____

b. If subcontracted, name and address of company that performed the tank cleaning:

c. How were tanks marked/labeled with permanent closure date: _____

I, Anne R. Garr, Assistant Secretary, hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the owner of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section I) is true, accurate and complete to the best of my knowledge and belief.



Signature of Tank Owner

02 / 03 / 2023

Date

Philadelphia Energy Solutions Refining and Marketing LLC

Company Name
(If applicable)

Assistant Secretary

Title

Section I - Table 1
Description of Aboveground Storage Tank System

DATE OF TANK SYSTEM CLOSURE (Month/Day/Year)	1/8/2022	8/26/2021	11/23/2021	4/18/2022	3/4/2022	3/14/2022	2/3/2022	5/20/2021	11/24/2021	11/1/2021	9/23/2021	3/16/2022	1/20/2022
Description of Aboveground Storage Tank System													
DEP Tank ID Number	011A	012A	040A	049A	053A	054A	055A	056A	057A	058A	059A	086A	088A
Total Capacity (Gallons)	8,568,000	13,158,600	634,200	8,568,000	5,758,200	5,758,200	6,346,200	8,421,000	8,568,000	13,158,600	13,158,600	6,346,200	5,640,852
Substance(s) Stored	a. Petroleum												
Throughout Operating	Unleaded Gasoline												
Life of Tank System	Leaded Gasoline												
(Check All That Apply)	Aviation Gasoline												
	Pure Ethanol												
	Blended Ethanol _____%												
	Kerosene												
	Jet Fuel												
	Diesel Fuel												
	Biodiesel _____%												
	Fuel Oil No. 1												
	Fuel Oil No. 2												
	Fuel Oil No. 4												
	Fuel Oil No. 5												
	Fuel Oil No. 6												
	New Motor Oil												
	Used Motor Oil												
	Nonpetroleum Oil, Specify												
	Other, Specify												
	Crude Oil	Crude Oil	Recovered Oil	Crude Oil	Crude Oil	Crude Oil	Crude Oil	Crude Oil	Crude Oil	Crude Oil	Crude Oil	Crude Oil	Light Cycle Oil
NOTE: If Hazardous Substance Block is Attach Safety Data Sheets (SDS)	b. Hazardous Substance												
	Name of Principal												
	CERCLA Substance												
	AND												
	Chemical Abstract Service (CAS) No.												
	c. Unknown												
CLOSURE METHOD(s):	DEP Tank ID Number:												
	011A	012A	040A	049A	053A	054A	055A	056A	057A	058A	059A	086A	088A
Partial Storage Tank System Closure													
Tank	a. Removal												
<input type="checkbox"/> N/A	b. Closure-in-Place												
	c. Change-in-Service												
Piping	a. Removal												
<input type="checkbox"/> N/A	b. Closure-in-Place												
	c. Change-in-Service												
Dispenser	a. Removal												
<input checked="" type="checkbox"/> N/A	b. Closure-in-Place												
	c. Change-in-Service												
Other	a. Removal												
_____	b. Closure-in-Place												
	c. Change-in-Service												

ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION II. Tank Handling Information

Facility ID Number 51-33620

DEP Tank ID Number(s) 011A, 049A, 053A, 054A, 055A, 066A, 068A,

Yes N/A

1. Briefly describe the excavation and initial on-site staging of uncontaminated/contaminated soil and debris

N/A

2. Briefly describe the method of piping system closure and the closure of the piping systems including the quantity and condition of the piping:

3. Briefly describe the condition of the tanks and any problems encountered during tank handling or tank removal activities:

4. Briefly describe the method used to purge the tanks of and monitor for hazardous or explosive vapors:



5. If tanks were cleaned on-site:

a. Briefly describe the tank cleaning process: The Tanks were drained, washed and rinsed of any residues, then demolished and the scrap metal sent off site for recycling.

b. If subcontracted, name and address of company that performed the tank cleaning:

ACV Enviro - 2527 Market Street, Aston, PA 19014
www.acvenviro.com



6. If tanks were "Closed-in-Place", briefly describe how tanks were rendered inoperative, marked permanently closed with date, vented and secured to prevent unauthorized entry: _____



7. If contamination was suspected or observed, the "Notification of Contamination" form was submitted.

I, Brian Gerner, hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to
(Print Name)
unsworn falsification to authorities) that I am the certified remover who performed the tank handling activities associated
with the closure of the above referenced storage tank(s) and that the information provided by me in this closure report
(Section I) is true, accurate and complete to the best of my knowledge and belief.



Signature of Certified Remover

12/15/2022

Date

5341

Remover Certification Number

1631

Company Certification Number

AST Construction, Inc.

Company Name

5 Canale Drive

Street

Egg Harbor Township, NJ 08234

City/Town, State, Zip

(609) 277-7101

Phone

ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION II. Tank Handling Information

Facility ID Number 51 - 33620
DEP Tank ID Number(s) 012A, 040A, 056A, 057A, 058A, 059A

Yes N/A

1. Briefly describe the excavation and initial on-site staging of uncontaminated/contaminated soil and debris:
Removed tank and piping debris was segregated and loaded into roll-off containers during demolition.

2. Briefly describe the method of piping system closure and the closure of the piping systems including the quantity and condition of the piping:

3. Briefly describe the condition of the tanks and any problems encountered during tank handling or tank removal activities:

4. Briefly describe the method used to purge the tanks of and monitor for hazardous or explosive vapors:

5. If tanks were cleaned on-site:
a. Briefly describe the tank cleaning process: Tanks were drained, cut open, rinsed and scrubbed clean of any residuals before demolition.

b. If subcontracted, name and address of company that performed the tank cleaning:
NorthStar Contracting Group, Inc., 2250 East Adams Avenue, Philadelphia, PA 19124

6. If tanks were "Closed-in-Place", briefly describe how tanks were rendered inoperative, marked permanently closed with date, vented and secured to prevent unauthorized entry: _____

7. If contamination was suspected or observed, the "Notification of Contamination" form was submitted.

I, KRISTIAN SATTERTHWAITZ hereby certify, under penalty of law as provided in 18 Pa. C. S. §4904 (relating to unsworn falsification to authorities) that I am the certified remover who performed the tank handling activities associated with the closure of the above referenced storage tank(s) and that the information provided by me in this closure report (Section I) is true, accurate and complete to the best of my knowledge and belief.

Kristian Sattertwhaitz
Signature of Certified Remover

1, 27, 2023
Date

5081
Remover Certification Number

1557
Company Certification Number

JD2 ENVIRONMENTAL, INC.
Company Name

800 E. WASHINGTON STREET
Street

WEST CHESTER, PA 19380
City/Town, State, Zip

(610) 430-8151
Phone

ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 040A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records


Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn (Print Name) falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

Section III

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 3 - 040A (PB 191)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-191-01	PB-191-01-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.088	0.16	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	Lead	SW6010D	Soil	110	2.34	12/9/2021	12/23/2021
PB-191-01	PB-191-01-SS01	4	4.5	Pyrene	SW8270D	Soil	0.22	0.12	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	Phenanthrene	SW8270D	Soil	0.11	0.12	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	Naphthalene	SW8270D	Soil	0.039	0.2	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	Indeno(1,2,3-cd)pyrene	SW8270D	Soil	0.1	0.16	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	Chrysene	SW8270D	Soil	0.16	0.12	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	0.19	0.12	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	0.15	0.16	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	0.17	0.12	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.12	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00073	12/9/2021	12/20/2021
PB-191-01	PB-191-01-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.2	12/9/2021	12/21/2021
PB-191-01	PB-191-01-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0029	12/9/2021	12/20/2021
PB-191-01	PB-191-01-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.0029	12/9/2021	12/20/2021
PB-191-01	PB-191-01-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0014	12/9/2021	12/20/2021
PB-191-01	PB-191-01-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0029	12/9/2021	12/20/2021
PB-191-01	PB-191-01-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.00073	12/9/2021	12/20/2021
PB-191-01	PB-191-01-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.0014	12/9/2021	12/20/2021
PB-191-01	PB-191-01-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.0014	12/9/2021	12/20/2021
PB-191-01	PB-191-01-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0029	12/9/2021	12/20/2021
PB-191-01	PB-191-01-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.0014	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	Benzo(a)anthracene	SW8270D	Soil	0.077	0.12	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00054	0.0049	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	Phenanthrene	SW8270D	Soil	0.092	0.12	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	Naphthalene	SW8270D	Soil	0.063	0.21	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	Indeno(1,2,3-cd)pyrene	SW8270D	Soil	0.055	0.16	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	Fluorene	SW8270D	Soil	ND	0.21	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	Chrysene	SW8270D	Soil	0.08	0.12	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	Benzo(g,h,i)perylene	SW8270D	Soil	0.062	0.16	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	Benzo(b)fluoranthene	SW8270D	Soil	0.089	0.12	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	Benzo(a)pyrene	SW8270D	Soil	0.071	0.16	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	Pyrene	SW8270D	Soil	0.1	0.12	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0013	0.0049	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	Cumene	SW8260C	Soil	0.0022	0.0024	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	Lead	SW6010D	Soil	46.8	2.36	12/9/2021	12/23/2021
PB-191-02	PB-191-02-SS01	3.5	4	Anthracene	SW8270D	Soil	ND	0.12	12/9/2021	12/21/2021
PB-191-02	PB-191-02-SS01	3.5	4	1,2-Dibromoethane	SW8260C	Soil	ND	0.0012	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	1,2-Dichloroethane	SW8260C	Soil	ND	0.0024	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	Ethyl Benzene	SW8260C	Soil	0.0012	0.0024	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0049	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	Toluene	SW8260C	Soil	0.0015	0.0024	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	Xylenes (total)	SW8260C	Soil	0.0047	0.0049	12/9/2021	12/20/2021
PB-191-02	PB-191-02-SS01	3.5	4	Benzene	SW8260C	Soil	0.0094	0.0012	12/9/2021	12/20/2021
PB-191-03	PB-191-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.12	0.17	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.13	0.12	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.06	0.17	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	Chrysene	SW8270D	Soil	0.1	0.12	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.21	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	Pyrene	SW8270D	Soil	0.16	0.12	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.21	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.11	0.12	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0026	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	Indeno(1,2,3-cd)pyrene	SW8270D	Soil	0.07	0.17	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0026	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0026	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0026	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	Lead	SW6010D	Soil	19.8	2.41	7/15/2022	7/18/2022
PB-191-03	PB-191-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00066	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00066	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-191-03	PB-191-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-191-04	PB-191-04-SS01	1.5	2	Anthracene	SW8270D	Soil	0.049	0.13	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Benzo(a)pyrene	SW8270D	Soil	0.076	0.18	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Benzo(b)fluoranthene	SW8270D	Soil	0.099	0.13	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Benzo(g,h,i)perylene	SW8270D	Soil	0.056	0.18	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Chrysene	SW8270D	Soil	0.095	0.13	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Fluorene	SW8270D	Soil	0.054	0.22	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Indeno(1,2,3-cd)pyrene	SW8270D	Soil	0.056	0.18	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Phenanthrene	SW8270D	Soil	0.19	0.13	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Xylenes (total)	SW8260C	Soil	0.0032	0.0026	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Pyrene	SW8270D	Soil	0.14	0.13	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Naphthalene	SW8270D	Soil	0.1	0.22	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	1,2-Dibromoethane	SW8260C	Soil	ND	0.00065	12/9/2021	12/19/2021
PB-191-04	PB-191-04-SS01	1.5	2	Benzo(a)anthracene	SW8270D	Soil	0.095	0.13	12/9/2021	12/21/2021
PB-191-04	PB-191-04-SS01	1.5	2	Toluene	SW8260C	Soil	ND	0.0013	12/9/2021	12/19/2021
PB-191-04	PB-191-04-SS01	1.5	2	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0023	0.0026	12/9/2021	12/19/2021
PB-191-04	PB-191-04-SS01	1.5	2	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	12/9/2021	12/19/2021
PB-191-04	PB-191-04-SS01	1.5	2	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0013	0.0026	12/9/2021	12/19/2021
PB-191-04	PB-191-04-SS01	1.5	2	Benzene	SW8260C	Soil	0.0012	0.00065	12/9/2021	12/19/2021
PB-191-04	PB-191-04-SS01	1.5	2	Cumene	SW8260C	Soil	0.0015	0.0013	12/9/2021	12/19/2021
PB-191-04	PB-191-04-SS01	1.5	2	Ethyl Benzene	SW8260C	Soil	0.001	0.0013	12/9/2021	12/19/2021
PB-191-04	PB-191-04-SS01	1.5	2	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0026	12/9/2021	12/19/2021
PB-191-04	PB-191-04-SS01	1.5	2	Lead	SW6010D	Soil	295	2.62	12/9/2021	12/23/2021
PB-191-05	PB-191-05-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	12/9/2021	12/19/2021
PB-191-05	PB-191-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	12/9/2021	12/21/2021
PB-191-05	PB-191-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/9/2021	12/21/2021
PB-191-05	PB-191-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/9/2021	12/21/2021
PB-191-05	PB-191-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/9/2021	12/21/2021
PB-191-05	PB-191-05-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	12/9/2021	12/21/2021
PB-191-05	PB-191-05-SS01	3	3.5	Indeno(1,2,3-cd)pyrene	SW8270D	Soil	ND	0.14	12/9/2021	12/21/2021
PB-191-05	PB-191-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	12/9/2021	12/21/2021
PB-191-05	PB-191-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/9/2021	12/21/2021
PB-191-05	PB-191-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/	

Table 3 - 040A (PB 191)

Sample/Analysis Information (Attachment for Section III.)

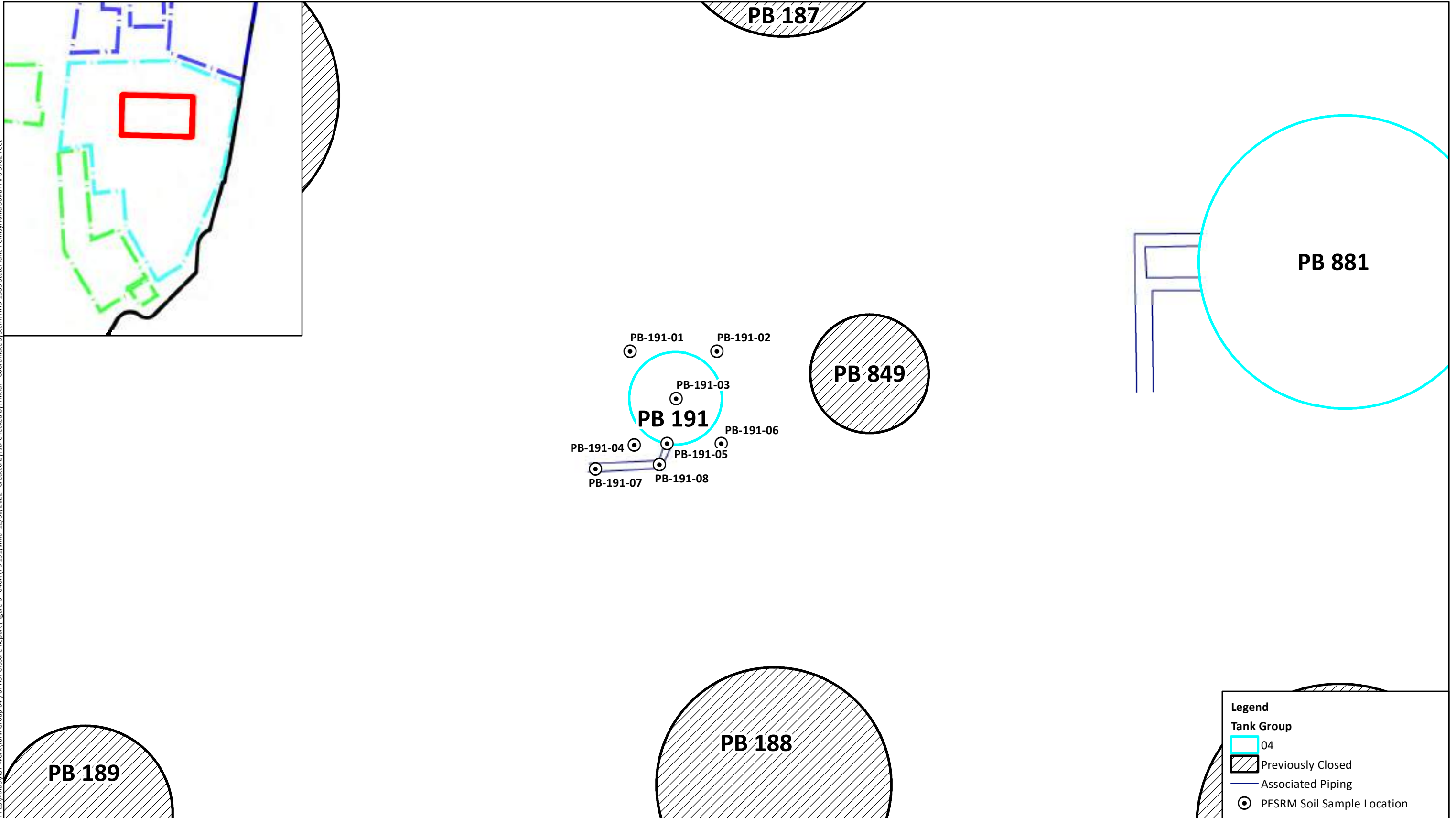
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-191-05	PB-191-05-SS01	3	3.5	Cumene	SW8260C	Soil	0.00027	0.0012	12/9/2021	12/19/2021
PB-191-05	PB-191-05-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	12/9/2021	12/19/2021
PB-191-05	PB-191-05-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00058	12/9/2021	12/19/2021
PB-191-05	PB-191-05-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	12/9/2021	12/21/2021
PB-191-06	PB-191-06-SS01	0.5	1	Benzo(a)pyrene	SW8270D	Soil	ND	0.8	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.6	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.8	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Chrysene	SW8270D	Soil	ND	0.6	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Fluorene	SW8270D	Soil	ND	1	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Indeno(1,2,3-cd)pyrene	SW8270D	Soil	ND	0.8	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Naphthalene	SW8270D	Soil	ND	1	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Anthracene	SW8270D	Soil	ND	0.6	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Pyrene	SW8270D	Soil	ND	0.6	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Xylenes (total)	SW8260C	Soil	ND	0.0023	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	Phenanthrene	SW8270D	Soil	ND	0.6	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/9/2021	12/20/2021
PB-191-06	PB-191-06-SS01	0.5	1	Benzo(a)anthracene	SW8270D	Soil	ND	0.6	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	1,2-Dibromoethane	SW8260C	Soil	ND	0.00057	12/9/2021	12/20/2021
PB-191-06	PB-191-06-SS01	0.5	1	Lead	SW6010D	Soil	26.5	2.38	12/9/2021	12/23/2021
PB-191-06	PB-191-06-SS01	0.5	1	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	12/9/2021	12/20/2021
PB-191-06	PB-191-06-SS01	0.5	1	Benzene	SW8260C	Soil	ND	0.00057	12/9/2021	12/20/2021
PB-191-06	PB-191-06-SS01	0.5	1	Cumene	SW8260C	Soil	0.0036	0.0011	12/9/2021	12/20/2021
PB-191-06	PB-191-06-SS01	0.5	1	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/9/2021	12/20/2021
PB-191-06	PB-191-06-SS01	0.5	1	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	12/9/2021	12/20/2021
PB-191-06	PB-191-06-SS01	0.5	1	Toluene	SW8260C	Soil	ND	0.0011	12/9/2021	12/20/2021
PB-191-06	PB-191-06-SS01	0.5	1	1,2,4-Trimethylbenzene	SW8260C	Soil	0.00046	0.0023	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Pyrene	SW8270D	Soil	0.021	0.12	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Fluorene	SW8270D	Soil	0.044	0.2	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Indeno(1,2,3-cd)pyrene	SW8270D	Soil	ND	0.16	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0028	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00071	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	Toluene	SW8260C	Soil	ND	0.0014	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/9/2021	12/21/2021
PB-191-07	DUP-25	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0028	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0014	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0028	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	Benzene	SW8260C	Soil	ND	0.00071	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	Cumene	SW8260C	Soil	0.0082	0.0014	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.0014	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0028	12/9/2021	12/20/2021
PB-191-07	DUP-25	4.5	5	Lead	SW6010D	Soil	218	4.72	12/9/2021	12/27/2021
PB-191-07	PB-191-07-SS01	4.5	5	Pyrene	SW8270D	Soil	0.44	0.12	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	0.19	0.16	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Anthracene	SW8270D	Soil	0.16	0.12	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	0.18	0.16	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	0.17	0.12	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Chrysene	SW8270D	Soil	0.26	0.12	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Fluorene	SW8270D	Soil	0.061	0.2	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Indeno(1,2,3-cd)pyrene	SW8270D	Soil	0.11	0.16	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.77	0.12	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0043	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Naphthalene	SW8270D	Soil	0.23	0.2	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0011	12/9/2021	12/20/2021
PB-191-07	PB-191-07-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	0.21	0.12	12/9/2021	12/21/2021
PB-191-07	PB-191-07-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0022	12/9/2021	12/20/2021
PB-191-07	PB-191-07-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0043	12/9/2021	12/20/2021
PB-191-07	PB-191-07-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0022	12/9/2021	12/20/2021
PB-191-07	PB-191-07-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0043	12/9/2021	12/20/2021
PB-191-07	PB-191-07-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.0011	12/9/2021	12/20/2021
PB-191-07	PB-191-07-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.0022	12/9/2021	12/20/2021
PB-191-07	PB-191-07-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.0022	12/9/2021	12/20/2021
PB-191-07	PB-191-07-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0043	12/9/2021	12/20/2021
PB-191-07	PB-191-07-SS01	4.5	5	Lead	SW6010D	Soil	176	4.59	12/9/2021	12/27/2021
PB-191-08	PB-191-08-SS01	4.5	5	Lead	SW6010D	Soil	84.5	2.3	12/9/2021	12/23/2021
PB-191-08	PB-191-08-SS01	4.5	5	Chrysene	SW8270D	Soil	0.052	0.12	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	0.054	0.12	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	0.043	0.16	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.19	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	Indeno(1,2,3-cd)pyrene	SW8270D	Soil	0.031	0.16	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	Naphthalene	SW8270D	Soil	0.059	0.19	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.084	0.12	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	0.047	0.12	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	Pyrene	SW8270D	Soil	0.07	0.12	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00057	12/9/2021	12/20/2021
PB-191-08	PB-191-08-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	12/9/2021	12/21/2021
PB-191-08	PB-191-08-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0031	0.0023	12/9/2021	12/20/2021
PB-191-08	PB-191-08-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/9/2021	12/20/2021
PB-191-08	PB-191-08-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00066	0.0023	12/9/2021	12/20/2021
PB-191-08	PB-191-08-SS01	4.5	5	Benzene	SW8260C	Soil	0.0003	0.00057	12/9/2021	12/20/2021
PB-191-08	PB-191-08-SS01	4.5	5	Cumene	SW8260C	Soil	0.003	0.0011	12/9/2021	12/20/2021
PB-191-08	PB-191-08-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.00021	0.0011	12/9/2021	12/20/2021
PB-191-08	PB-191-08-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	12/9/2021	12/20/2021
PB-191-08	PB-191-08-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0011	12/9/2021	12/20/2021
PB-191-08	PB-191-08-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	0.00285	0.0023	12/9/2021	12/20/2021

Notes:

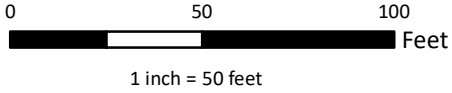
SS -- Soil Sample.


DUP-25 is a field duplicate associated with sample PB-191-07-SS01.

File: N:\GIS\Prj\PO44_001_PESRM-PES\WYD\AST\Work\Tank Group 04\For AST Closure Report\Figure 3 - 040A (PB 191).mxd 12/30/2022 Created by: J.D. Checked by: Initial Coordinate System: NAD_1983_StatePlane_Pennsylvania_South_FPS_3702_Feet



Legend	
Tank Group	
 	04
 	Previously Closed
	Associated Piping
●	PESRM Soil Sample Location



SAFETY FIRST	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT: Aboveground Storage Tank Closure
	PROJECT NUMBER: P044.001.002

Site Location and Sampling Map 040A (PB 191)
Figure 3



Photograph 1:
View of Tank 040A (PB 191) during demolition.



Photograph 2:
View of scrap piles and Tank 040A (PB 191) following demolition.



Photograph 3:
View of scrap piles and Tank 040A (PB 191) following demolition.



Photograph 4:
View of the concrete pad following demolition.



Photograph 5:

View of vicinity soil following demolition.

Product Movement and Waste Disposal Documentation (Tank 040A)

PES Project Load Ticket

Load Ticket: 17916

Date: 11-17-21

Sold to: Alligheny **Scrap**
 Location: Tank 191
 Carrier: Alligheny

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: Tank Plate

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade _____
- Other Alloy, Grade _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / Fill
- Sand Fill
- Crushed Stone
- Other: _____

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004-D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

Scale Ticket #: _____

Gross Weight: 58500 lbs

Tare Weight: 40000 lbs

Net Weight: 18500 lbs

NorthStar Rep. Signature: [Signature]

Received By: [Signature]

HILCO REDEVELOPEMENT PARTNERS

3144 W. PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20032074

Date: 11/17/2021 9:45 AM

Phone: () -

Fax: () -

Customer: HILCO
HILCO

Order Number: 001
SCRAP REMOVAL
Tons: 89535.288
Loads: 5880

DT261-2 - ALLEGHENY TRUCK 261 W/TRAILER 2
CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	9.25 tn						

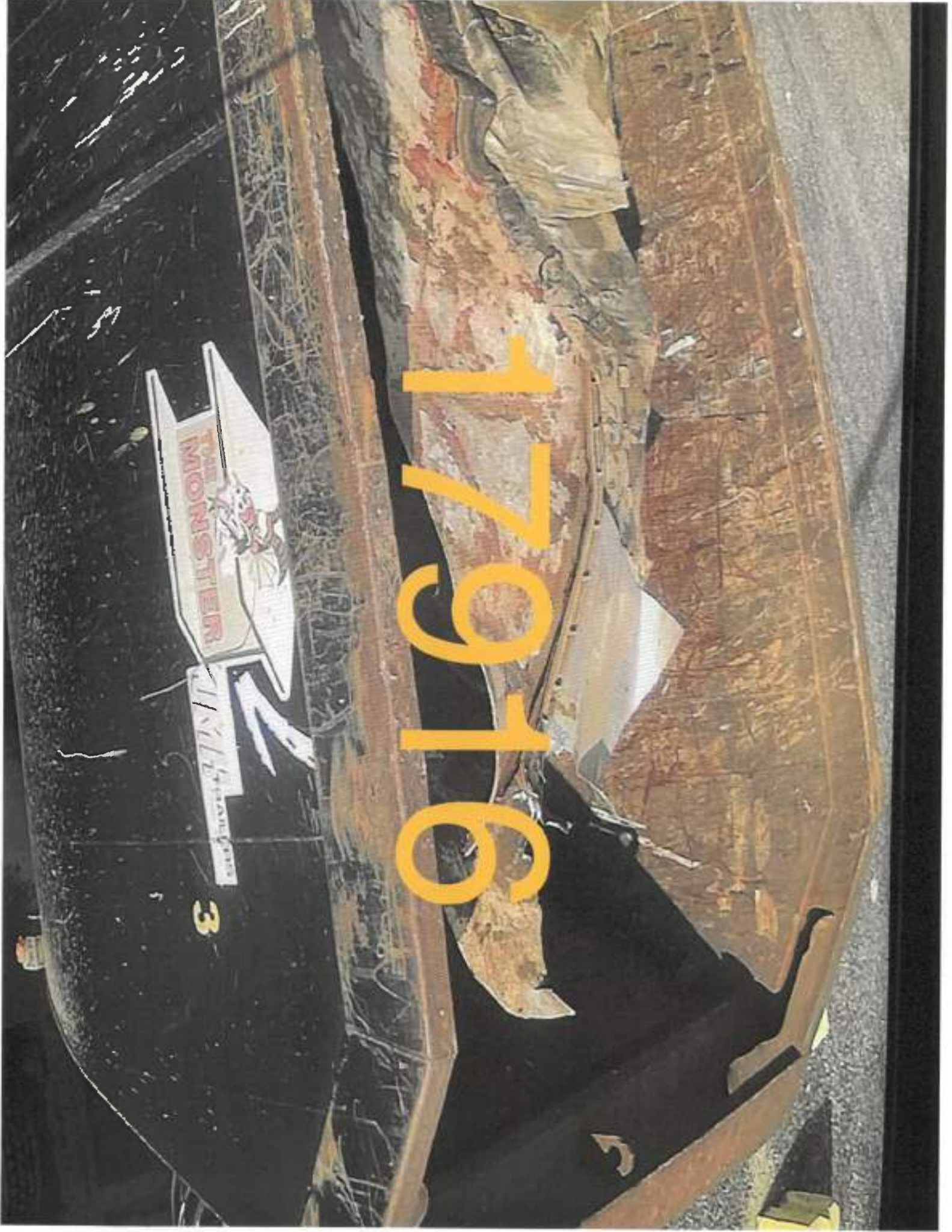
Weight Information

Material	Gross	Tare	Net
SCRAP	68500.00	40000.00	18500.00

17916

THE MONSTER
KILLERS

3



ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 049A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

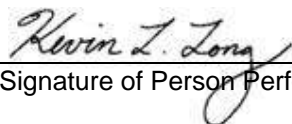
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 4 - 049A (PB 826)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-826-01	PB-826-01-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0014	7/13/2022	7/16/2022
PB-826-01	PB-826-01-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0028	7/13/2022	7/16/2022
PB-826-01	PB-826-01-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-01	PB-826-01-SS01	3	3.5	Lead	SW6010D	Soil	3.14	4.68	7/13/2022	7/19/2022
PB-826-01	PB-826-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0028	7/13/2022	7/19/2022
PB-826-01	PB-826-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00069	7/13/2022	7/16/2022
PB-826-01	PB-826-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0014	7/13/2022	7/16/2022
PB-826-01	PB-826-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0028	7/13/2022	7/16/2022
PB-826-01	PB-826-01-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00069	7/13/2022	7/16/2022
PB-826-01	PB-826-01-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0014	7/13/2022	7/16/2022
PB-826-01	PB-826-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0014	7/13/2022	7/16/2022
PB-826-01	PB-826-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.00032	0.0028	7/13/2022	7/16/2022
PB-826-02	PB-826-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/13/2022	7/16/2022
PB-826-02	PB-826-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/13/2022	7/16/2022
PB-826-02	PB-826-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/13/2022	7/15/2022
PB-826-02	PB-826-02-SS01	3	3.5	Lead	SW6010D	Soil	3.36	4.04	7/13/2022	7/19/2022
PB-826-02	PB-826-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	7/13/2022	7/16/2022
PB-826-02	PB-826-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/13/2022	7/16/2022
PB-826-02	PB-826-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/13/2022	7/16/2022
PB-826-02	PB-826-02-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00052	7/13/2022	7/16/2022
PB-826-02	PB-826-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/13/2022	7/16/2022
PB-826-02	PB-826-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/13/2022	7/16/2022
PB-826-02	PB-826-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.001	0.0021	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0013	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-03	PB-826-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-03	PB-826-03-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-03	PB-826-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-03	PB-826-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-03	PB-826-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-03	PB-826-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-03	PB-826-03-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-03	PB-826-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-03	PB-826-03-SS01	3	3.5	Lead	SW6010D	Soil	3.14	4.08	7/13/2022	7/19/2022
PB-826-03	PB-826-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.02	0.0025	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0013	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00063	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0025	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00063	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0025	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0025	7/13/2022	7/16/2022
PB-826-03	PB-826-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0019	7/13/2022	7/16/2022
PB-826-04	PB-826-04-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	Lead	SW6010D	Soil	3.88	4.14	7/13/2022	7/19/2022
PB-826-04	PB-826-04-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0039	7/13/2022	7/19/2022
PB-826-04	PB-826-04-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-04	PB-826-04-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0039	7/13/2022	7/16/2022
PB-826-04	PB-826-04-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00097	7/13/2022	7/16/2022
PB-826-04	PB-826-04-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0019	7/13/2022	7/16/2022
PB-826-04	PB-826-04-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0039	7/13/2022	7/16/2022
PB-826-04	PB-826-04-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00097	7/13/2022	7/16/2022
PB-826-04	PB-826-04-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0019	7/13/2022	7/16/2022
PB-826-04	PB-826-04-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0019	7/13/2022	7/16/2022
PB-826-04	PB-826-04-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.0012	0.0039	7/13/2022	7/16/2022
PB-826-05	PB-826-05-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/13/2022	7/16/2022
PB-826-05	PB-826-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/13/2022	7/16/2022
PB-826-05	PB-826-05-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-05	PB-826-05-SS01	3	3.5	Lead	SW6010D	Soil	3.46	4.14	7/13/2022	7/19/2022
PB-826-05	PB-826-05-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/13/2022	7/19/2022
PB-826-05	PB-826-05-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/13/2022	7/16/2022
PB-826-05	PB-826-05-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/13/2022	7/16/2022
PB-826-05	PB-826-05-SS01	3	3.5							

Table 4 - 049A (PB 826)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-826-06	PB-826-06-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Lead	SW6010D	Soil	8.1	10.4	7/13/2022	7/19/2022
PB-826-06	PB-826-06-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.013	0.003	7/13/2022	7/16/2022
PB-826-06	PB-826-06-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0015	7/13/2022	7/16/2022
PB-826-06	PB-826-06-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0015	7/13/2022	7/16/2022
PB-826-06	PB-826-06-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00075	7/13/2022	7/16/2022
PB-826-06	PB-826-06-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.003	7/13/2022	7/16/2022
PB-826-06	PB-826-06-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0015	7/13/2022	7/16/2022
PB-826-06	PB-826-06-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00075	7/13/2022	7/16/2022
PB-826-06	PB-826-06-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.003	7/13/2022	7/16/2022
PB-826-06	PB-826-06-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-06	PB-826-06-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.003	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-07	PB-826-07-SS01	3	3.5	Lead	SW6010D	Soil	3.19	10.3	7/13/2022	7/19/2022
PB-826-07	PB-826-07-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.016	0.0024	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00061	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00061	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/13/2022	7/16/2022
PB-826-07	PB-826-07-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/13/2022	7/15/2022
PB-826-08	PB-826-08-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	7/13/2022	7/16/2022
PB-826-08	PB-826-08-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/13/2022	7/16/2022
PB-826-08	PB-826-08-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/13/2022	7/16/2022
PB-826-08	PB-826-08-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/13/2022	7/16/2022
PB-826-08	PB-826-08-SS01	4.5	5	Benzene	SW8260C	Soil	0.00033	0.00051	7/13/2022	7/16/2022
PB-826-08	PB-826-08-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/13/2022	7/16/2022
PB-826-08	PB-826-08-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/13/2022	7/16/2022
PB-826-08	PB-826-08-SS01	4.5	5	Lead	SW6010D	Soil	4.67	4.69	7/13/2022	7/19/2022
PB-826-08	PB-826-08-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.001	7/13/2022	7/16/2022
PB-826-08	PB-826-08-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.001	7/13/2022	7/16/2022
PB-826-08	PB-826-08-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0014	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00068	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-826-09	PB-826-09-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0027	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0027	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0014	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0027	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00068	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.0014	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.0014	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0027	7/13/2022	7/16/2022
PB-826-09	PB-826-09-SS01	4.5	5	Lead	SW6010D	Soil	5.55	4.83	7/13/2022	7/19/2022
PB-826-10	PB-826-10-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0015	7/13/2022	7/16/2022
PB-826-10	PB-826-10-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00073	7/13/2022	7/16/2022
PB-826-10	PB-826-10-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0029	7/13/2022	7/15/2022
PB-826-10	PB-826-10-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0029	7/13/2022	7/16/2022
PB-826-10	PB-826-10-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0015	7/13/2022	7/16/2022
PB-826-10	PB-826-10-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0029	7/13/2022	7/16/2022
PB-826-10	PB-826-10-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00073	7/13/2022	7/16/2022
PB-826-10	PB-826-10-SS01	3</								

Table 4 - 049A (PB 826)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-826-11	PB-826-11-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Lead	SW6010D	Soil	3.61	4.12	7/14/2022	7/19/2022
PB-826-11	PB-826-11-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00059	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00059	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/14/2022	7/18/2022
PB-826-11	PB-826-11-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Lead	SW6010D	Soil	3	4.04	7/14/2022	7/19/2022
PB-826-12	PB-826-12-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00055	7/14/2022	7/18/2022
PB-826-12	PB-826-12-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0014	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0007	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Lead	SW6010D	Soil	4.29	4.12	7/14/2022	7/19/2022
PB-826-13	PB-826-13-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0028	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0028	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0014	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0028	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0007	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0014	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0014	7/14/2022	7/18/2022
PB-826-13	PB-826-13-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0028	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.64	0.12	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Anthracene	SW8270D	Soil	0.061	0.12	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.32	0.19	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Fluorene	SW8270D	Soil	0.18	0.19	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Chrysene	SW8270D	Soil	0.042	0.12	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.03	0.12	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Pyrene	SW8270D	Soil	0.16	0.12	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.062	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.214	0.12	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.031	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Lead	SW6010D	Soil	8.32	2.23	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	4.4	0.12	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.031	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Cumene	SW8260C	Soil	0.28	0.062	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.73	0.062	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.12	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.062	7/14/2022	7/18/2022
PB-826-14	PB-826-14-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	12	0.12	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Chrysene	SW8270D	Soil	0.15	0.1	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.027	0.1	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.029	0.1	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.027	0.14	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Fluorene	SW8270D	Soil	0.39	0.17	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Naphthalene	SW8270D	Soil	2.7	0.17	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Lead	SW6010D	Soil	1.7	2.11	7/14/2022	7/20/2022
PB-826-15	DUP-44	3	3.5	Phenanthrene	SW8270D	Soil	0.99	0.1	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	Pyrene	SW8270D	Soil	0.085	0.1	7/14/2022	7/18/2022
PB-826-15	DUP-44	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	15	0.14	7/14/2022	7/19/2022
PB-826-15	DUP-44	3	3.5	Toluene	SW8260C	Soil	0.051	0.071	7/14/2022	7/19/2022
PB-826-15	DUP-44	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.14	7/14/2022	7/19/2022
PB-826-15	DUP-44	3	3.5	Ethyl Benzene	SW8260C	Soil	0.56	0.071	7/14/2022	7/19/2022
PB-826-15	DUP-44	3	3.5	Cumene	SW8260C	Soil	1	0.071	7/14/2022	7/19/2022
PB-826-15	DUP-44	3	3.5	Benzene	SW8260C	Soil	0.068	0.036	7/14/2022	7/19/2022
PB-826-15	DUP-44	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	4.8	0.14	7/14/2022	7/19/2022
PB-826-15	DUP-44	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.071	7/14/2022	7/19/2022
PB-826-15	DUP-44	3								

Table 4 - 049A (PB 826)

Sample/Analysis Information (Attachment for Section III.)

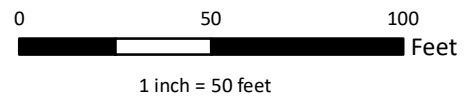
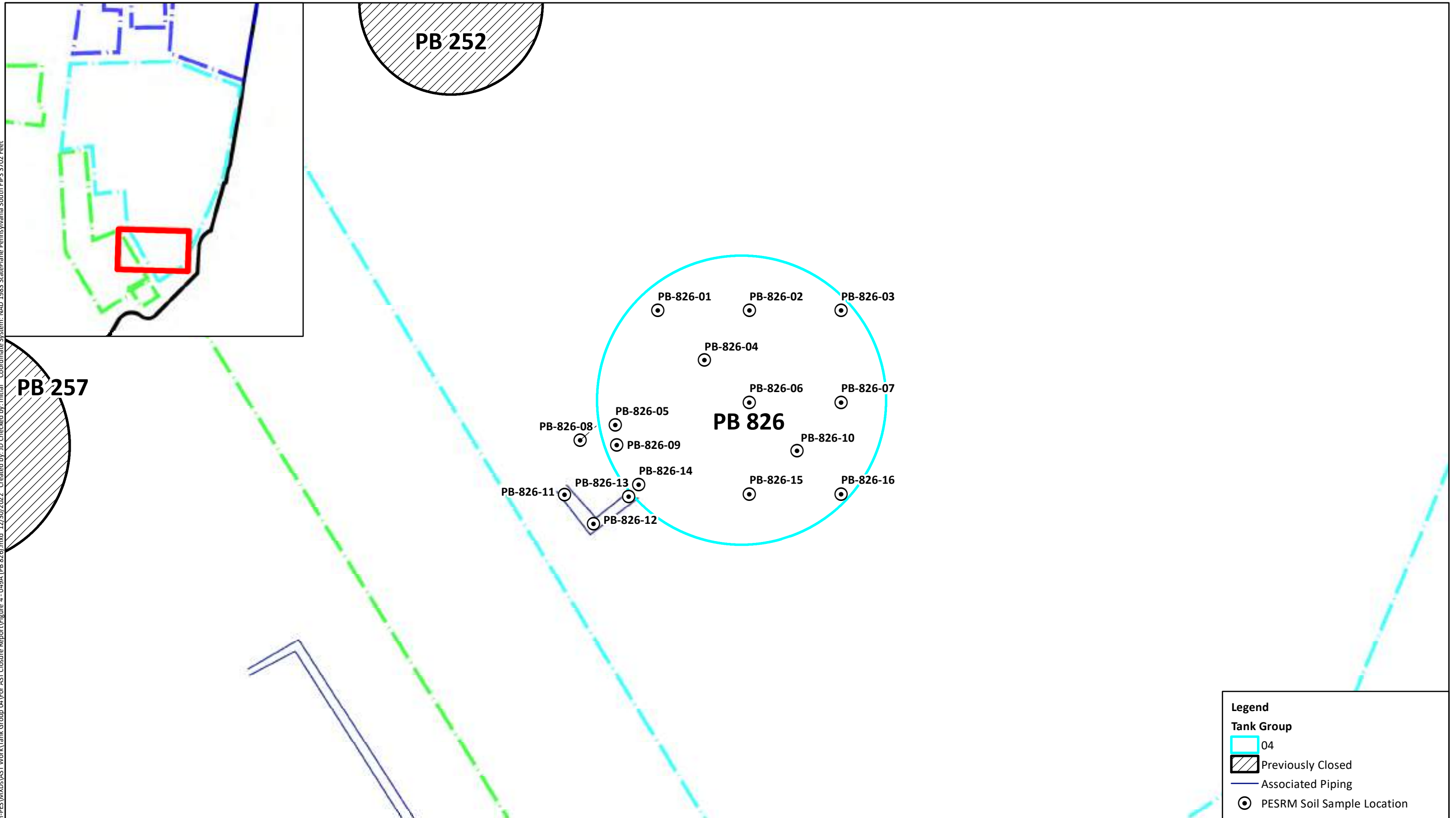
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-826-15	PB-826-15-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.041	0.15	7/14/2022	7/18/2022
PB-826-15	PB-826-15-SS01	3	3.5	Chrysene	SW8270D	Soil	0.095	0.12	7/14/2022	7/18/2022
PB-826-15	PB-826-15-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/14/2022	7/18/2022
PB-826-15	PB-826-15-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.052	0.19	7/14/2022	7/18/2022
PB-826-15	PB-826-15-SS01	3	3.5	Lead	SW6010D	Soil	162	2.2	7/14/2022	7/18/2022
PB-826-15	PB-826-15-SS01	3	3.5	Pyrene	SW8270D	Soil	0.18	0.12	7/14/2022	7/18/2022
PB-826-15	PB-826-15-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.15	0.12	7/14/2022	7/18/2022
PB-826-15	PB-826-15-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0034	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00086	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0034	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00086	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0034	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0034	7/14/2022	7/19/2022
PB-826-15	PB-826-15-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.025	0.19	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Lead	SW6010D	Soil	6.77	2.22	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0036	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.00061	0.0036	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00089	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0018	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00089	0.0036	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00089	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0018	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0018	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0036	7/14/2022	7/18/2022
PB-826-16	PB-826-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0018	7/14/2022	7/18/2022

Notes:

SS -- Soil Sample.

DUP-44 is a field duplicate associated with sample PB-826-15-SS01.

File: N:\GIS\Prj\PO44_001_PESRM-PES\MXDS\AST\Work\Tank Group 04\For AST Closure Report\Figure 4 - 049A (PB 826).mxd 12/30/2022 Created by: JD Checked by: Initial Coordinate System: NAD_1983_StatePlane_Pennsylvania_South_FPS_3702_Feet



SAFETY FIRST



CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

- Legend**
- Tank Group
 - 04
 - Previously Closed
 - Associated Piping
 - PESRM Soil Sample Location

Site Location and Sampling Map 049A (PB 826)

Figure 4



Photograph 1:

View of Tank 049A (PB 826) prior to demolition.



Photograph 2:

View of product removal prior to demolition.



Photograph 3:

View of the concrete pad following demolition.

Product Movement and Waste Disposal Documentation (Tank 049A)



PES Project Load Ticket

Load Ticket: 19948

5120103.

Date: 04-18-22

Sold to: Allegany **Scrap**
Location: Tank 816
Carrier: Allegany

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: Tank Plate

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade _____
- Other Alloy, Grade _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / Fill
- Sand Fill
- Crushed Stone
- Other: _____

Scale Ticket #: _____

Gross Weight: 80196 lb

Tare Weight: 36280 lb

Net Weight: 43906 lb

NorthStar Rep. Signature: _____

Received By: _____

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (Flammable D001, corrosive D002, reactive D003, toxicity D004 - D013)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

HILCO REDEVELOPMENT PARTNERS
3144 W. PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20035832
Date: 04/18/2022 7:48 AM
Phone: () -
Fax: () -

Customer: HILCO
HILCO

Order Number: 001
SCRAP REMOVAL
Tons: 147547.556
Loads: 9606

DT07-30 - ALLEGHENY TRUCK 07 W/TRAILER 30
CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	21.95 10						

Weight Information

Material	Gross	Tare	Net
SCRAP	50180 00	36280 00	43900 00

19948

INC.
7759

TR 30

VIEW

04-11-05-2022 07:40:00

ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 053A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

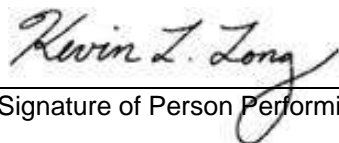
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn (Print Name) falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 5 - 053A (PB 840)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-840-01	DUP-38	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-01	DUP-38	3	3.5	Phenanthrene	SW8270D	Soil	0.39	0.11	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	Naphthalene	SW8270D	Soil	0.045	0.19	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	Fluorene	SW8270D	Soil	0.052	0.19	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	Chrysene	SW8270D	Soil	0.43	0.11	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.18	0.15	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.52	0.11	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.4	0.15	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.44	0.11	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	Pyrene	SW8270D	Soil	0.53	0.11	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/8/2022	7/14/2022
PB-840-01	DUP-38	3	3.5	Anthracene	SW8270D	Soil	0.092	0.11	7/8/2022	7/11/2022
PB-840-01	DUP-38	3	3.5	Lead	SW6010D	Soil	36.7	2.2	7/8/2022	7/15/2022
PB-840-01	DUP-38	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	7/8/2022	7/15/2022
PB-840-01	DUP-38	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00057	7/8/2022	7/14/2022
PB-840-01	DUP-38	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-01	DUP-38	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/8/2022	7/14/2022
PB-840-01	DUP-38	3	3.5	Benzene	SW8260C	Soil	ND	0.00057	7/8/2022	7/14/2022
PB-840-01	DUP-38	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-01	DUP-38	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-01	DUP-38	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	7/8/2022	7/14/2022
PB-840-01	PB-840-01-SS01	3	3.5	Toluene	SW8260C	Soil	0.0026	0.0016	7/8/2022	7/14/2022
PB-840-01	PB-840-01-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.19	0.12	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.046	0.2	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Chrysene	SW8270D	Soil	0.22	0.12	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.12	0.16	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.18	0.12	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.15	0.16	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.15	0.12	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Pyrene	SW8270D	Soil	0.21	0.12	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0014	0.0032	7/8/2022	7/14/2022
PB-840-01	PB-840-01-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.008	0.0032	7/8/2022	7/12/2022
PB-840-01	PB-840-01-SS01	3	3.5	Lead	SW6010D	Soil	19.2	4.58	7/8/2022	7/15/2022
PB-840-01	PB-840-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0008	7/8/2022	7/14/2022
PB-840-01	PB-840-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0016	7/8/2022	7/14/2022
PB-840-01	PB-840-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0023	0.0032	7/8/2022	7/14/2022
PB-840-01	PB-840-01-SS01	3	3.5	Benzene	SW8260C	Soil	0.006	0.0008	7/8/2022	7/14/2022
PB-840-01	PB-840-01-SS01	3	3.5	Cumene	SW8260C	Soil	0.0092	0.0016	7/8/2022	7/14/2022
PB-840-01	PB-840-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.00068	0.0016	7/8/2022	7/14/2022
PB-840-01	PB-840-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0032	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/8/2022	7/12/2022
PB-840-02	PB-840-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/8/2022	7/12/2022
PB-840-02	PB-840-02-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-02	PB-840-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-02	PB-840-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-02	PB-840-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-02	PB-840-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-02	PB-840-02-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-02	PB-840-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-02	PB-840-02-SS01	3	3.5	Lead	SW6010D	Soil	4.66	2.26	7/8/2022	7/15/2022
PB-840-02	PB-840-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.00019	0.001	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	Cumene	SW8260C	Soil	0.00034	0.001	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	Benzene	SW8260C	Soil	0.00021	0.00051	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0059	0.002	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0035	0.002	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.0025	0.002	7/8/2022	7/14/2022
PB-840-02	PB-840-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.19	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.19	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.00095	7/8/2022	7/13/2022
PB-840-03	PB-840-03-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	Lead	SW6010D	Soil	5.92	2.29	7/8/2022	7/15/2022
PB-840-03	PB-840-03-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/8/2022	7/15/2022
PB-840-03	PB-840-03-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-03	PB-840-03-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/8/2022	7/13/2022
PB-840-03	PB-840-03-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	7/8/2022	7/13/2022
PB-840-03	PB-840-03-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00095	7/8/2022	7/13/2022
PB-840-03	PB-840-03-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00062	0.0019	7/8/2022	7/13/2022
PB-840-03	PB-840-03-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00048	7/8/2022	7/13/2022
PB-840-03	PB-840-03-SS01	4.5	5	Cumene	SW8260C	Soil	0.00015	0.00095	7/8/2022	7/13/2022
PB-840-03	PB-840-03-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.00028	0.00095	7/8/2022	7/13/2022
PB-840-03	PB-840-03-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/8/2022	7/13/2022
PB-840-04	PB-840-04-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/8/2022	7/13/2022
PB-840-04	PB-840-04-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/8/2022	7/13/2022
PB-840-04	PB-840-04-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/8/2022	7/12/2022
PB-840-04	PB-840-04-SS01	3	3.5	Lead	SW6010D	Soil	10.9	2.02	7/8/2022	7/15/2022
PB-840-04	PB-840-04-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/8/2022	7/15/2022
PB-840-04	PB-840-04-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	7/8/2022	7/13/2022
PB-840-04	PB-840-04-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/8/2022	7/13/2022
PB-840-04	PB-840-04-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/8/2022	7/13/2022
PB-840-04	PB-840-04-SS01	3	3.5	Benzene						

Table 5 - 053A (PB 840)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-840-05	PB-840-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.075	0.18	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Fluorene	SW8270D	Soil	0.023	0.18	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Chrysene	SW8270D	Soil	0.056	0.11	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.025	0.14	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.053	0.11	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.03	0.11	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Pyrene	SW8270D	Soil	0.056	0.11	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.073	0.11	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Lead	SW6010D	Soil	103	2.12	7/8/2022	7/15/2022
PB-840-05	PB-840-05-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0029	7/8/2022	7/14/2022
PB-840-05	PB-840-05-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0014	7/8/2022	7/14/2022
PB-840-05	PB-840-05-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0014	7/8/2022	7/14/2022
PB-840-05	PB-840-05-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00072	7/8/2022	7/14/2022
PB-840-05	PB-840-05-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00047	0.0029	7/8/2022	7/14/2022
PB-840-05	PB-840-05-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0014	7/8/2022	7/14/2022
PB-840-05	PB-840-05-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00072	7/8/2022	7/14/2022
PB-840-05	PB-840-05-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0029	7/8/2022	7/14/2022
PB-840-05	PB-840-05-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-05	PB-840-05-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0029	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.18	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.18	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Pyrene	SW8270D	Soil	0.018	0.11	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.00093	7/8/2022	7/14/2022
PB-840-06	PB-840-06-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.049	0.11	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/8/2022	7/14/2022
PB-840-06	PB-840-06-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/8/2022	7/12/2022
PB-840-06	PB-840-06-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/14/2022
PB-840-06	PB-840-06-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00093	7/8/2022	7/14/2022
PB-840-06	PB-840-06-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/14/2022
PB-840-06	PB-840-06-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00046	7/8/2022	7/14/2022
PB-840-06	PB-840-06-SS01	4.5	5	Cumene	SW8260C	Soil	0.0016	0.00093	7/8/2022	7/14/2022
PB-840-06	PB-840-06-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.00058	0.00093	7/8/2022	7/14/2022
PB-840-06	PB-840-06-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/8/2022	7/14/2022
PB-840-06	PB-840-06-SS01	4.5	5	Lead	SW6010D	Soil	6.05	2.2	7/8/2022	7/15/2022
PB-840-07	PB-840-07-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.019	0.0022	7/8/2022	7/13/2022
PB-840-07	PB-840-07-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-07	PB-840-07-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/8/2022	7/13/2022
PB-840-07	PB-840-07-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.0441	0.0022	7/8/2022	7/13/2022
PB-840-07	PB-840-07-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00056	7/8/2022	7/13/2022
PB-840-07	PB-840-07-SS01	3	3.5	Lead	SW6010D	Soil	4.94	2.26	7/8/2022	7/15/2022
PB-840-07	PB-840-07-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0056	0.0022	7/8/2022	7/13/2022
PB-840-07	PB-840-07-SS01	3	3.5	Benzene	SW8260C	Soil	0.023	0.00056	7/8/2022	7/13/2022
PB-840-07	PB-840-07-SS01	3	3.5	Cumene	SW8260C	Soil	0.002	0.0011	7/8/2022	7/13/2022
PB-840-07	PB-840-07-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.016	0.0011	7/8/2022	7/13/2022
PB-840-07	PB-840-07-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/8/2022	7/13/2022
PB-840-07	PB-840-07-SS01	3	3.5	Toluene	SW8260C	Soil	0.00079	0.0011	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	Lead	SW6010D	Soil	5.75	2.33	7/8/2022	7/15/2022
PB-840-08	PB-840-08-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-08	PB-840-08-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	Benzene	SW8260C	Soil	0.00069	0.00055	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	Cumene	SW8260C	Soil	0.00015	0.0011	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/8/2022	7/13/2022
PB-840-08	PB-840-08-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/8/2022	7/13/2022
PB-840-09	PB-840-09-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	197	0.61	7/8/2022	7/13/2022
PB-840-09	PB-840-09-SS01	4.5	5	Naphthalene	SW8270D	Soil	9.3	1.9	7/8/2022	7/14/2022
PB-840-09	PB-840-09-SS01	4.5	5	Fluorene	SW8270D	Soil	1.9	0.19	7/8/2022	7/12/2022
PB-840-09	PB-840-09-SS01	4.5	5	Chrysene	SW8270D	Soil	0.22	0.12	7/8/2022	7/12/2022
PB-840-09	PB-840-09-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	0.072	0.15	7/8/2022	7/12/2022
PB-840-09	PB-840-09-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	0.12	0.12	7/8/2022	7/12/2022
PB-840-09	PB-840-09-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	0.096	0.15	7/8/2022	7/12/2022
PB-840-09	PB-840-09-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	0.97	0.12	7/8/2022	7/12/2022
PB-840-09	PB-840-09-SS01	4.5	5	Anthracene	SW8270D	Soil	0.16	0.12	7/8/2022	7/12/2022
PB-840-09	PB-840-09-SS01	4.5	5	Phenanthrene	SW8270D	Soil	4.8	0.12	7/8/2022	7/12/2022
PB-840-09	PB-840-09-SS01	4.5	5	Lead	SW6010D	Soil	4.3	2.27	7/8/2022	7/15/2022
PB-840-09	PB-840-09-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	92	1.2	7/8/2022	7/15/2022
PB-840-09	PB-840-09-SS01	4.5	5	Pyrene	SW8270D	Soil	0.48	0.12	7/8/2022	7/12/2022
PB-840-09	PB-840-09-SS01	4.5	5	Toluene	SW8260C	Soil	0.3	0.3	7/8/2022	7/14/2022
PB-840-09	PB-840-09-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.15	7/8/2022	7/14/2022
PB-840-09	PB-840-09-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.3	7/8/2022	7/14/2022
PB-840-09	PB-840-09-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	33	0.61	7/8/2022	7/14/2022
PB-840-0										

Table 5 - 053A (PB 840)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-840-10	PB-840-10-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/8/2022	7/12/2022
PB-840-10	PB-840-10-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/8/2022	7/12/2022
PB-840-10	PB-840-10-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-10	PB-840-10-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-10	PB-840-10-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-10	PB-840-10-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-10	PB-840-10-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-10	PB-840-10-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-10	PB-840-10-SS01	3	3.5	Lead	SW6010D	Soil	5.38	2.25	7/8/2022	7/15/2022
PB-840-10	PB-840-10-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-10	PB-840-10-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/8/2022	7/14/2022
PB-840-10	PB-840-10-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-10	PB-840-10-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-10	PB-840-10-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00055	7/8/2022	7/14/2022
PB-840-10	PB-840-10-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0038	0.0022	7/8/2022	7/14/2022
PB-840-10	PB-840-10-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-10	PB-840-10-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/8/2022	7/14/2022
PB-840-10	PB-840-10-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.012	0.0022	7/8/2022	7/14/2022
PB-840-10	PB-840-10-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.02255	0.0022	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-11	PB-840-11-SS01	2.5	3	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/12/2022
PB-840-11	PB-840-11-SS01	2.5	3	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-11	PB-840-11-SS01	2.5	3	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/12/2022
PB-840-11	PB-840-11-SS01	2.5	3	Chrysene	SW8270D	Soil	0.041	0.12	7/8/2022	7/12/2022
PB-840-11	PB-840-11-SS01	2.5	3	Fluorene	SW8270D	Soil	0.072	0.2	7/8/2022	7/12/2022
PB-840-11	PB-840-11-SS01	2.5	3	Naphthalene	SW8270D	Soil	0.09	0.2	7/8/2022	7/12/2022
PB-840-11	PB-840-11-SS01	2.5	3	Pyrene	SW8270D	Soil	0.031	0.12	7/8/2022	7/12/2022
PB-840-11	PB-840-11-SS01	2.5	3	Toluene	SW8260C	Soil	ND	0.00078	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	Phenanthrene	SW8270D	Soil	0.18	0.12	7/8/2022	7/12/2022
PB-840-11	PB-840-11-SS01	2.5	3	Lead	SW6010D	Soil	7.06	2.36	7/8/2022	7/15/2022
PB-840-11	PB-840-11-SS01	2.5	3	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0016	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	Ethyl Benzene	SW8260C	Soil	0.0097	0.00078	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	Cumene	SW8260C	Soil	0.0058	0.00078	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	Benzene	SW8260C	Soil	0.0084	0.00039	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	1,3,5-Trimethylbenzene	SW8260C	Soil	0.04	0.0016	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	1,2-Dichloroethane	SW8260C	Soil	ND	0.00078	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	1,2-Dibromoethane	SW8260C	Soil	ND	0.00039	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	1,2,4-Trimethylbenzene	SW8260C	Soil	0.072	0.0016	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	Xylenes (total)	SW8260C	Soil	0.0589	0.0016	7/8/2022	7/14/2022
PB-840-11	PB-840-11-SS01	2.5	3	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-12	PB-840-12-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/8/2022	7/14/2022
PB-840-12	PB-840-12-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/8/2022	7/14/2022
PB-840-12	PB-840-12-SS01	3	3.5	Lead	SW6010D	Soil	5.21	2.26	7/8/2022	7/15/2022
PB-840-12	PB-840-12-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00053	7/8/2022	7/14/2022
PB-840-12	PB-840-12-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-12	PB-840-12-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/8/2022	7/14/2022
PB-840-12	PB-840-12-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00053	7/8/2022	7/14/2022
PB-840-12	PB-840-12-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-12	PB-840-12-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-12	PB-840-12-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	7/8/2022	7/14/2022
PB-840-12	PB-840-12-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-13	PB-840-13-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/8/2022	7/14/2022
PB-840-13	PB-840-13-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/8/2022	7/14/2022
PB-840-13	PB-840-13-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/12/2022
PB-840-13	PB-840-13-SS01	3	3.5	Lead	SW6010D	Soil	6.78	2.1	7/8/2022	7/15/2022
PB-840-13	PB-840-13-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/8/2022	7/15/2022
PB-840-13	PB-840-13-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00059	7/8/2022	7/14/2022
PB-840-13	PB-840-13-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/8/2022	7/14/2022
PB-840-13	PB-840-13-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/8/2022	7/14/2022
PB-840-13	PB-840-13-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00059	7/8/2022	7/14/2022
PB-840-13	PB-840-13-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/8/2022	7/14/2022
PB-840-13	PB-840-13-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/8/2022	7/14/2022
PB-840-13	PB-840-13-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	7/8/2022	7/14/2022
PB-840-14	PB-840-14-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-14	PB-840-14-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/8/2022	7/12/2022
PB-840-14	PB-840-14-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/8/2022	7/12/2022
PB-840-14	PB-840-14-SS01	3	3.5	Chrysene	SW8270D	Soil	0.17	0.11	7/8/2022	7/12/2022
PB-840-14	PB-840-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.099	0.14	7/8/2022	7/12/2022
PB-840-14	PB-840-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.22	0.11	7/8/2022	7/12/2022
PB-840-14	PB-840-14-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.18	0.14	7/8/2022	7/12/2022
PB-840-14	PB-840-14-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.18	0.11	7/8/2022	7/12/2022
PB-840-14	PB-840-14-SS01	3	3.5	Pyrene	SW8270D	Soil	0.28	0.11	7/8/2022	7/12/2022
PB-840-14	PB-840-14-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.17	0.11	7/8/2022	7/12/2022
PB-840-14	PB-840-14-SS01	3	3.5	Lead	SW6010D	Soil	44.4	2.09	7/8/2022	7/15/2022
PB-840-14	PB-840-14-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/8/2022	7/14/2022
PB-840-14	PB-840-14-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-14	PB-840-14-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-14	PB-840-14-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00054	7/8/2022	7/14/2022
PB-840-14	PB-840-14-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/8/2022	7/14/2022
PB-840-14	PB-840-14-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/8/2022	7/14/2022
PB-840-14	PB-840-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	7/8/2022	7/14/2022
PB-840-14	PB-840-14-SS01	3	3.5							

Table 5 - 053A (PB 840)

Sample/Analysis Information (Attachment for Section III.)

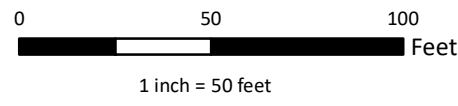
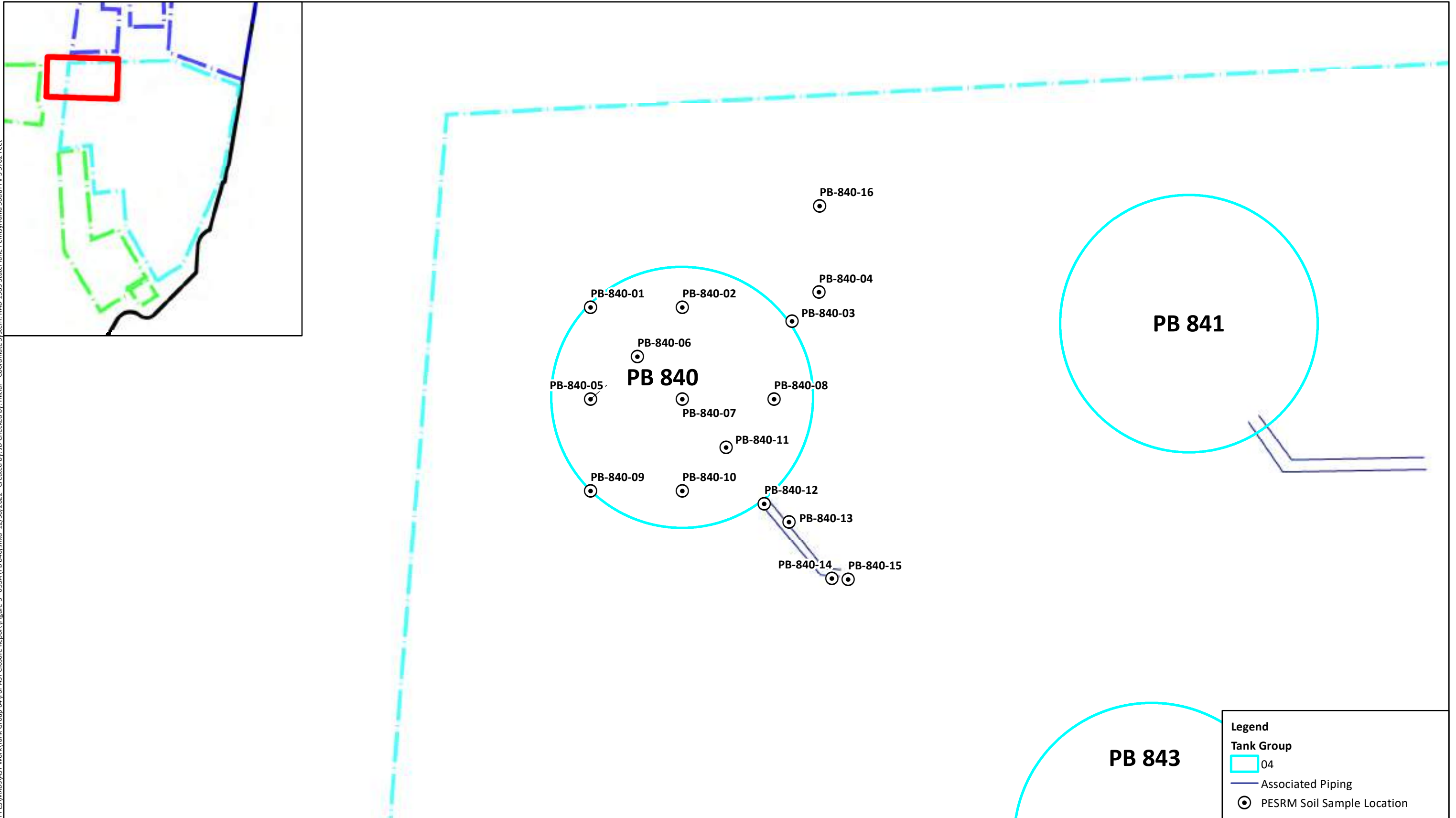
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-840-15	PB-840-15-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.22	0.14	7/8/2022	7/12/2022
PB-840-15	PB-840-15-SS01	3	3.5	Chrysene	SW8270D	Soil	0.44	0.11	7/8/2022	7/12/2022
PB-840-15	PB-840-15-SS01	3	3.5	Fluorene	SW8270D	Soil	0.05	0.18	7/8/2022	7/12/2022
PB-840-15	PB-840-15-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.091	0.18	7/8/2022	7/12/2022
PB-840-15	PB-840-15-SS01	3	3.5	Pyrene	SW8270D	Soil	0.68	0.11	7/8/2022	7/12/2022
PB-840-15	PB-840-15-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.41	0.11	7/8/2022	7/12/2022
PB-840-15	PB-840-15-SS01	3	3.5	Lead	SW6010D	Soil	49.2	4.3	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00055	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/8/2022	7/15/2022
PB-840-15	PB-840-15-SS01	3	3.5	Anthracene	SW8270D	Soil	0.11	0.11	7/8/2022	7/12/2022
PB-840-16	PB-840-16-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.12	0.11	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.14	0.15	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.18	0.11	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.098	0.15	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	Chrysene	SW8270D	Soil	0.13	0.11	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.14	0.11	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	Pyrene	SW8270D	Soil	0.18	0.11	7/8/2022	7/11/2022
PB-840-16	PB-840-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	Lead	SW6010D	Soil	53.1	2.22	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00044	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00089	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00044	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00089	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00089	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/8/2022	7/15/2022
PB-840-16	PB-840-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00089	7/8/2022	7/15/2022

Notes:

SS -- Soil Sample.

DUP-38 is a field duplicate associated with sample PB-840-01-SS01.

File: N:\GIS\Project\044_001_PESRM-PES\MapDocs\AST\Work\Tank Group 04\For AST Closure Report\Figure 5 - 053A (PB 840).mxd 12/30/2022 Created by: J.D. Checked by: Initial Coordinate System: NAD_1983_StatePlane_Pennsylvania_South_FPS_3702_Feet



SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Site Location and Sampling Map 053A (PB 840) Figure 5
	PROJECT: Aboveground Storage Tank Closure	
PROJECT NUMBER: P044.001.002		



Photograph 1:

View of Tank 053A (PB 840) during demolition.



Photograph 2:

View of Tank 053A (PB 840) during demolition.



Photograph 3:
View of scrap piles during demolition.



Photograph 4:
View of soil following demolition.

Product Movement and Waste Disposal Documentation (Tank 053A)



PES Project Load Ticket

Load Ticket: 18662

Date: 03-02-22

S120109.

Sold to: Scrap
Location: TANK 840
Carrier: Highway

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast iron
- Mixed
- Pipe
- Light Iron
- Re Bar
- Other: Tank Plate

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade _____
- Other Alloy, Grade _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / Fill
- Sand / Fill
- Crushed Stone
- Other: _____

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004 -D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

Scale Ticket #: _____

Gross Weight: 89420 lbs

Tare Weight: 38760 lbs

Net Weight: 50660 lb

NorthStar Rep. Signature: [Signature]

Received By: [Signature]

HILCO REDEVELOPEMENT PARTNERS

3144 W. PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20034677

Date: 03/02/2022 7:45 AM

Phone: () -

Fax: () -

Customer: HILCO
HILCO

Order Number: 001
SCRAP REMOVAL
Tons: 129024.956
Loads: 8451

DT261-2 - ALLEGHENY TRUCK 261 W/TRAILER 2
CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	25.33 tn						

Weight Information

Material	Gross	Tare	Net
SCRAP	89423.00	38760.00	50660.00

18662



3

ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 054A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

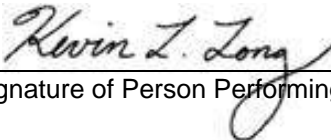
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn (Print Name) falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 6 - 054A (PB 841)

Sample/Analysis Information (Attachment for Section III.)

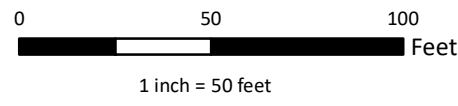
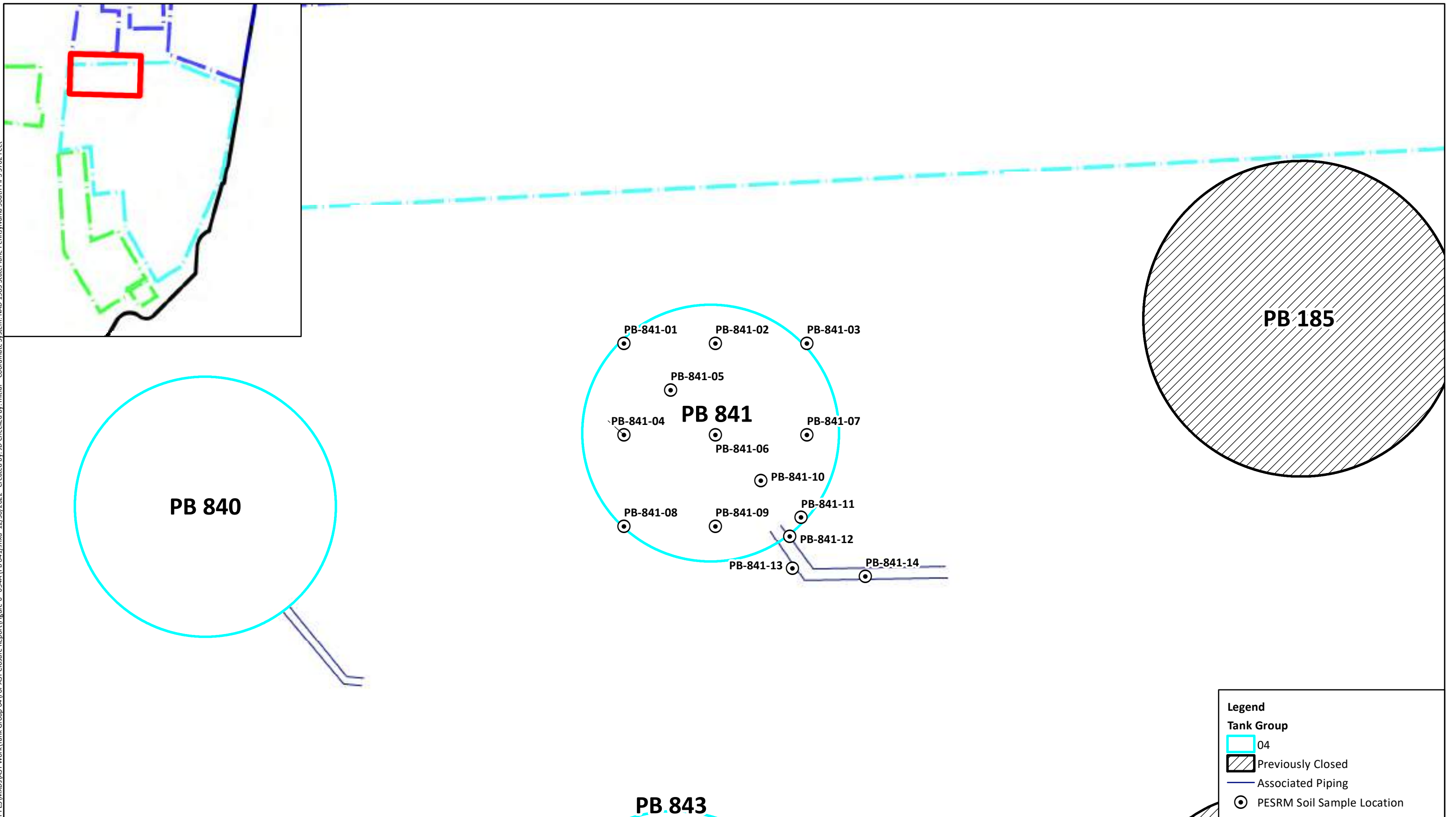
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-841-06	PB-841-06-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Lead	SW6010D	Soil	4.07	2.21	7/12/2022	7/18/2022
PB-841-06	PB-841-06-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00059	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00059	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-06	PB-841-06-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.037	0.12	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.21	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.21	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Pyrene	SW8270D	Soil	0.038	0.12	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0017	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.032	0.12	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00087	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0035	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0035	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0017	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0035	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00087	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0017	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0017	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0035	7/12/2022	7/15/2022
PB-841-07	PB-841-07-SS01	3	3.5	Lead	SW6010D	Soil	8.11	2.48	7/12/2022	7/18/2022
PB-841-08	PB-841-08-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Lead	SW6010D	Soil	5	2.04	7/12/2022	7/18/2022
PB-841-08	PB-841-08-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0026	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00065	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0026	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0026	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00065	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0013	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0026	7/12/2022	7/15/2022
PB-841-08	PB-841-08-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0013	7/12/2022	7/15/2022
PB-841-09	DUP-42	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.13	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.13	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00059	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-09	DUP-42	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	Benzene	SW8260C	Soil	ND	0.00059	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	7/12/2022	7/16/2022
PB-841-09	DUP-42	3	3.5	Lead	SW6010D	Soil	3.6	2	7/12/2022	7/18/2022
PB-841-09	PB-841-09-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0027	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.22	0.11	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Pyrene	SW8270D	Soil	0.35	0.11	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.2	0.11	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Fluorene	SW8270D	Soil	0.026	0.19	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Chrysene	SW8270D	Soil	0.22	0.11	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.11	0.15	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.28	0.11	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.23	0.15	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0014	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Anthracene	SW8270D	Soil	0.062	0.11	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0055	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0055	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0027	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0055	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0014	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0027	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0027	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0055	7/12/2022	7/15/2022
PB-841-09	PB-841-09-SS01	3	3.5	Lead						

Table 6 - 054A (PB 841)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-841-10	PB-841-10-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-841-10	PB-841-10-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-841-10	PB-841-10-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-10	PB-841-10-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-841-10	PB-841-10-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-10	PB-841-10-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-841-10	PB-841-10-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-10	PB-841-10-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-10	PB-841-10-SS01	4	4.5	Lead	SW6010D	Soil	2.76	2.02	7/12/2022	7/18/2022
PB-841-10	PB-841-10-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	7/12/2022	7/15/2022
PB-841-10	PB-841-10-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-841-10	PB-841-10-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-841-10	PB-841-10-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.00061	7/12/2022	7/15/2022
PB-841-10	PB-841-10-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/12/2022	7/15/2022
PB-841-10	PB-841-10-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-841-10	PB-841-10-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00061	7/12/2022	7/15/2022
PB-841-10	PB-841-10-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/12/2022	7/15/2022
PB-841-10	PB-841-10-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/12/2022	7/15/2022
PB-841-10	PB-841-10-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.18	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.18	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0014	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00069	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0028	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0028	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0014	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0028	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00069	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.0014	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.0014	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0028	7/12/2022	7/15/2022
PB-841-11	PB-841-11-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-841-11	PB-841-11-SS01	4.5	5	Lead	SW6010D	Soil	2.51	2.06	7/12/2022	7/18/2022
PB-841-12	PB-841-12-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00092	7/12/2022	7/17/2022
PB-841-12	PB-841-12-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/12/2022	7/17/2022
PB-841-12	PB-841-12-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/12/2022	7/15/2022
PB-841-12	PB-841-12-SS01	3	3.5	Lead	SW6010D	Soil	3.72	2.24	7/12/2022	7/18/2022
PB-841-12	PB-841-12-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/12/2022	7/17/2022
PB-841-12	PB-841-12-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/12/2022	7/17/2022
PB-841-12	PB-841-12-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00092	7/12/2022	7/17/2022
PB-841-12	PB-841-12-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/12/2022	7/17/2022
PB-841-12	PB-841-12-SS01	3	3.5	Benzene	SW8260C	Soil	0.0002	0.00046	7/12/2022	7/17/2022
PB-841-12	PB-841-12-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00092	7/12/2022	7/17/2022
PB-841-12	PB-841-12-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00092	7/12/2022	7/17/2022
PB-841-12	PB-841-12-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/12/2022	7/17/2022
PB-841-13	PB-841-13-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0017	7/12/2022	7/16/2022
PB-841-13	PB-841-13-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Fluorene	SW8270D	Soil	0.036	0.18	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Chrysene	SW8270D	Soil	0.21	0.11	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.14	0.14	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.26	0.11	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.22	0.14	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.24	0.11	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Pyrene	SW8270D	Soil	0.41	0.11	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.39	0.11	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Lead	SW6010D	Soil	93.9	2.1	7/12/2022	7/18/2022
PB-841-13	PB-841-13-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0035	7/12/2022	7/16/2022
PB-841-13	PB-841-13-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0017	7/12/2022	7/16/2022
PB-841-13	PB-841-13-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0017	7/12/2022	7/16/2022
PB-841-13	PB-841-13-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00086	7/12/2022	7/16/2022
PB-841-13	PB-841-13-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0035	7/12/2022	7/16/2022
PB-841-13	PB-841-13-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0017	7/12/2022	7/16/2022
PB-841-13	PB-841-13-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00086	7/12/2022	7/16/2022
PB-841-13	PB-841-13-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0035	7/12/2022	7/16/2022
PB-841-13	PB-841-13-SS01	3	3.5	Anthracene	SW8270D	Soil	0.088	0.11	7/12/2022	7/19/2022
PB-841-13	PB-841-13-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0035	7/12/2022	7/16/2022
PB-841-14	PB-841-14-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.035	0.11	7/12/2022	7/19/2022
PB-841-14	PB-841-14-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.044	0.14	7/12/2022	7/19/2022
PB-841-14	PB-841-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.061	0.11	7/12/2022	7/19/2022
PB-841-14	PB-841-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.039	0.14	7/12/2022	7/19/2022
PB-841-14	PB-841-14-SS01	3	3.5	Chrysene	SW8270D	Soil	0.044	0.11	7/12/2022	7/19/2022
PB-841-14	PB-841-14-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/12/2022	7/19/2022
PB-841-14	PB-841-14-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/12/2022	7/19/2022
PB-841-14	PB-841-14-SS01	3	3.5	Pyrene	SW8270D	Soil	0.054	0.11	7/12/2022	7/19/2022
PB-841-14	PB-841-14-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/12/2022	7/16/2022
PB-841-14	PB-841-14-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.032	0.11	7/12/2022	7/19/2022
PB-841-14	PB-841-14-SS01	3	3.5	Lead	SW6010D	Soil	38.9	2.08	7/12/2022	7/18/2022
PB-841-14	PB-841-14-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	7/12/2022	7/16/2022
PB-841-14	PB-841-14-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/12/2022	7/16/2022
PB-841-14	PB-841-14-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/12/2022	7/16/2022
PB-841-14	PB-841-14-SS01	3	3.5	Benzene	SW8260C	Soil	0.00032	0.00058	7/12/2022	7/16/2022
PB-841-14	PB-841-14-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/12/2022	7/16/2022
PB-841-14	PB-841-14-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/12/2022	7/16/2022
PB-841-14	PB-841-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND			

File: N:\GIS\Prj\PO44_001_PESRM-PES\MXDS\AST\Work\Tank_Group_04\Fer_AST_Closure_Report\Figure 6 - 054A (PB 841).mxd 12/30/2022 Created by: JD Checked by: Initial Coordinate System: NAD_1983_StatePlane_Pennsylvania_South_FPS_3702_Feet



SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT: Aboveground Storage Tank Closure
	PROJECT NUMBER: P044.001.002

Legend	
	Tank Group 04
	Previously Closed
	Associated Piping
	PESRM Soil Sample Location

Site Location and Sampling Map 054A (PB 841)
Figure 6



Photograph 1:

View of Tank 054A (PB 841) prior to demolition.



Photograph 2:

View of Tank 054A (PB 841) prior to demolition.



Photograph 3:
View of piping for Tank 054A (PB 841) prior to demolition.



Photograph 4:
View of soil following demolition.

Product Movement and Waste Disposal Documentation (Tank 054A)



PES Project Load Ticket

Load Ticket: 18864

S120103

Date: 03-10-12

Sold to: Allegheny ^{Scrap}
Location: TANK 841
Carrier: Allegheny

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: Tank Plate

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade _____
- Other Alloy, Grade _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / Fill
- Sand Fill
- Crushed Stone
- Other: _____

Scale Ticket #: _____
Gross Weight: 87020 lbs
Tare Weight: 38760 lbs
Net Weight: 48260 lbs

NorthStar Rep. Signature: [Signature]
Received By: [Signature]

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004 -D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest It: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

HILCO REDEVELOPMENT PARTNERS

3144 W. PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20034853

Date: 03/10/2022 7:47 AM

Phone: () -

Fax: () -

Customer: HILCO

HILCO

Order Number: 001

SCRAP REMOVAL

Tons: 132478.581

Loads: 8627

DT261-2 - ALLEGHENY TRUCK 261 W/TRAILER 2

CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	24.13 tn						

Weight Information

Material	Gross	Tare	Net
SCRAP	87020.00	38760.00	48260.00

18864



3

03-10-2022 07:48:29

ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 086A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

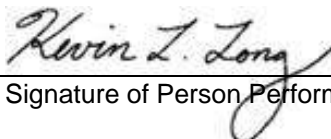
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 12 - 086A (PB 843)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-843-01	PB-843-01-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.11	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.11	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.18	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.18	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	Lead	SW6010D	Soil	3.02	2.08	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/11/2022	7/14/2022
PB-843-01	PB-843-01-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.0005	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-01	PB-843-01-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00091	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-02	PB-843-02-SS01	3	3.5	Lead	SW6010D	Soil	3.41	2.18	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00091	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	Benzene	SW8260C	Soil	0.00085	0.00046	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00091	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00091	7/11/2022	7/15/2022
PB-843-02	PB-843-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/11/2022	7/15/2022
PB-843-03	PB-843-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0013	7/11/2022	7/14/2022
PB-843-03	PB-843-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0027	7/11/2022	7/14/2022
PB-843-03	PB-843-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/11/2022	7/13/2022
PB-843-03	PB-843-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0027	7/11/2022	7/14/2022
PB-843-03	PB-843-03-SS01	3	3.5	Lead	SW6010D	Soil	3.06	2.08	7/11/2022	7/15/2022
PB-843-03	PB-843-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00067	7/11/2022	7/14/2022
PB-843-03	PB-843-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	7/11/2022	7/14/2022
PB-843-03	PB-843-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0027	7/11/2022	7/14/2022
PB-843-03	PB-843-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00067	7/11/2022	7/14/2022
PB-843-03	PB-843-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0013	7/11/2022	7/14/2022
PB-843-03	PB-843-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	7/11/2022	7/14/2022
PB-843-03	PB-843-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0027	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-04	PB-843-04-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-04	PB-843-04-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-04	PB-843-04-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-04	PB-843-04-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-04	PB-843-04-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-04	PB-843-04-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-04	PB-843-04-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-04	PB-843-04-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-04	PB-843-04-SS01	3	3.5	Lead	SW6010D	Soil	5.63	2.26	7/11/2022	7/15/2022
PB-843-04	PB-843-04-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	Benzene	SW8260C	Soil	0.00078	0.00061	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00061	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/11/2022	7/14/2022
PB-843-04	PB-843-04-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/11/2022	7/14/2022
PB-843-05	PB-843-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	Lead	SW6010D	Soil	6.17	4.48	7/11/2022	7/16/2022
PB-843-05	PB-843-05-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-843-05	PB-843-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-05	PB-843-05-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/11/2022	7/14/2022
PB-843-05	PB-843-05-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	7/11/2022	7/14/2022
PB-843-05	PB-843-05-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-843-05	PB-843-05-SS01	3								

Table 12 - 086A (PB 843)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-843-06	PB-843-06-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/11/2022	7/15/2022
PB-843-06	PB-843-06-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-06	PB-843-06-SS01	4	4.5	Lead	SW6010D	Soil	6.13	2.22	7/11/2022	7/15/2022
PB-843-06	PB-843-06-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/11/2022	7/15/2022
PB-843-06	PB-843-06-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00061	7/11/2022	7/15/2022
PB-843-06	PB-843-06-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/11/2022	7/15/2022
PB-843-06	PB-843-06-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/11/2022	7/15/2022
PB-843-06	PB-843-06-SS01	4	4.5	Benzene	SW8260C	Soil	0.0057	0.00061	7/11/2022	7/15/2022
PB-843-06	PB-843-06-SS01	4	4.5	Cumene	SW8260C	Soil	0.00071	0.0012	7/11/2022	7/15/2022
PB-843-06	PB-843-06-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/11/2022	7/15/2022
PB-843-06	PB-843-06-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	0.00037	0.0024	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	Xylenes (total)	SW8260C	Soil	0.0049	0.0019	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	Naphthalene	SW8270D	Soil	0.038	0.19	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Chrysene	SW8270D	Soil	0.1	0.11	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Benzo(b)fluoranthene	SW8270D	Soil	0.033	0.11	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Pyrene	SW8270D	Soil	0.14	0.11	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Lead	SW6010D	Soil	14.2	2.21	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	Methyl tert-butyl ether	SW8260C	Soil	0.00047	0.0019	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	Ethyl Benzene	SW8260C	Soil	0.00071	0.00096	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	Cumene	SW8260C	Soil	0.00016	0.00096	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	Benzene	SW8260C	Soil	0.00032	0.00048	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0011	0.0019	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00096	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0018	0.0019	7/11/2022	7/15/2022
PB-843-07	PB-843-07-SS01	2	2.5	Benzo(a)anthracene	SW8270D	Soil	0.037	0.11	7/11/2022	7/13/2022
PB-843-07	PB-843-07-SS01	2	2.5	Toluene	SW8260C	Soil	0.002	0.00096	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-08	PB-843-08-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00055	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/11/2022	7/15/2022
PB-843-08	PB-843-08-SS01	3	3.5	Lead	SW6010D	Soil	3.99	2.03	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	Lead	SW6010D	Soil	18.3	2.32	7/11/2022	7/16/2022
PB-843-09	PB-843-09-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-09	PB-843-09-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.0025	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.0012	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0025	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.0012	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	Benzene	SW8260C	Soil	0.0018	0.00063	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0025	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0025	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-09	PB-843-09-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00063	7/11/2022	7/15/2022
PB-843-09	PB-843-09-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-09	PB-843-09-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-09	PB-843-09-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-09	PB-843-09-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-09	PB-843-09-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-843-09	PB-843-09-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-843-09	PB-843-09-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-09	PB-843-09-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Xylenes (total)	SW8260C	Soil	0.007	0.0021	7/11/2022	7/14/2022
PB-843-10	PB-843-10-SS01	2	2.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/11/2022	7/14/2022
PB-843-10	PB-843-10-SS01	2	2.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-10	PB-843-10-SS01	2	2.5	Lead	SW6010D	Soil	5.3	2.21	7/11/2022	7/15/2022
PB-843-10	PB-843-10-SS01	2	2.5	Toluene	SW8260C	Soil	ND	0.001	7/11/2022	7/14/2022
PB-843-10	PB-843-10-SS01	2	2.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	7/11/2022	7/14/2022
PB-843-10	PB-843-10-SS01	2	2.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/11/2022	7/14/2022
PB-843-10	PB-843-10-SS01	2	2.5	1,3,5-Trimethylbenzene	SW8260C					

Table 12 - 086A (PB 843)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-843-11	DUP-40	4.5	5	Phenanthrene	SW8270D	Soil	0.026	0.12	7/11/2022	7/13/2022
PB-843-11	DUP-40	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-843-11	DUP-40	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-843-11	DUP-40	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-11	DUP-40	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-11	DUP-40	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-11	DUP-40	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-11	DUP-40	4.5	5	Benzo(a)anthracene	SW8270D	Soil	0.022	0.12	7/11/2022	7/13/2022
PB-843-11	DUP-40	4.5	5	Pyrene	SW8270D	Soil	0.026	0.12	7/11/2022	7/13/2022
PB-843-11	DUP-40	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0026	7/11/2022	7/15/2022
PB-843-11	DUP-40	4.5	5	Toluene	SW8260C	Soil	ND	0.0013	7/11/2022	7/15/2022
PB-843-11	DUP-40	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0026	7/11/2022	7/15/2022
PB-843-11	DUP-40	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	7/11/2022	7/15/2022
PB-843-11	DUP-40	4.5	5	Cumene	SW8260C	Soil	ND	0.0013	7/11/2022	7/15/2022
PB-843-11	DUP-40	4.5	5	Benzene	SW8260C	Soil	ND	0.00066	7/11/2022	7/15/2022
PB-843-11	DUP-40	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0026	7/11/2022	7/15/2022
PB-843-11	DUP-40	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	7/11/2022	7/15/2022
PB-843-11	DUP-40	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0026	7/11/2022	7/15/2022
PB-843-11	DUP-40	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00066	7/11/2022	7/15/2022
PB-843-11	PB-843-11-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	Lead	SW6010D	Soil	5.83	2.25	7/11/2022	7/15/2022
PB-843-11	PB-843-11-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-11	PB-843-11-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0025	7/11/2022	7/14/2022
PB-843-11	PB-843-11-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0013	7/11/2022	7/14/2022
PB-843-11	PB-843-11-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	0.00045	0.0025	7/11/2022	7/14/2022
PB-843-11	PB-843-11-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	7/11/2022	7/14/2022
PB-843-11	PB-843-11-SS01	4.5	5	Cumene	SW8260C	Soil	0.00026	0.0013	7/11/2022	7/14/2022
PB-843-11	PB-843-11-SS01	4.5	5	Benzene	SW8260C	Soil	0.00024	0.00063	7/11/2022	7/14/2022
PB-843-11	PB-843-11-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0025	7/11/2022	7/14/2022
PB-843-11	PB-843-11-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	7/11/2022	7/14/2022
PB-843-11	PB-843-11-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00063	7/11/2022	7/14/2022
PB-843-11	PB-843-11-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0025	7/11/2022	7/14/2022
PB-843-12	PB-843-12-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.18	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.18	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-12	PB-843-12-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	Benzene	SW8260C	Soil	0.0017	0.00051	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	Cumene	SW8260C	Soil	0.00045	0.001	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	0.0009	0.002	7/11/2022	7/15/2022
PB-843-12	PB-843-12-SS01	4	4.5	Lead	SW6010D	Soil	8.48	2.15	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	Lead	SW6010D	Soil	3.21	2.08	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-843-13	PB-843-13-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00051	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	7/11/2022	7/15/2022
PB-843-13	PB-843-13-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-14	PB-843-14-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00099	7/11/2022	7/15/2022
PB-843-14	PB-843-14-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-14	PB-843-14-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-14	PB-843-14-SS01	3	3.5	Lead	SW6010D	Soil	11.2	2.24	7/11/2022	7/15/2022
PB-843-14	PB-843-14-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-14	PB-843-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00049	7/11/2022	7/15/2022
PB-843-14	PB-843-14-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00099	7/11/2022	7/15/2022
PB-843-14	PB-843-14-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-843-14	PB-843-14-SS01	3	3.5	Benzene	SW8260C	Soil	0.00035	0.00049	7/11/2022	7/15/2022
PB-843-14	PB-843-14-SS01	3	3.5	Cumene	SW8260C	Soil	0.00017	0.00099	7/11/2022	7/15/2022
PB-843-14	PB									

Table 12 - 086A (PB 843)

Sample/Analysis Information (Attachment for Section III.)

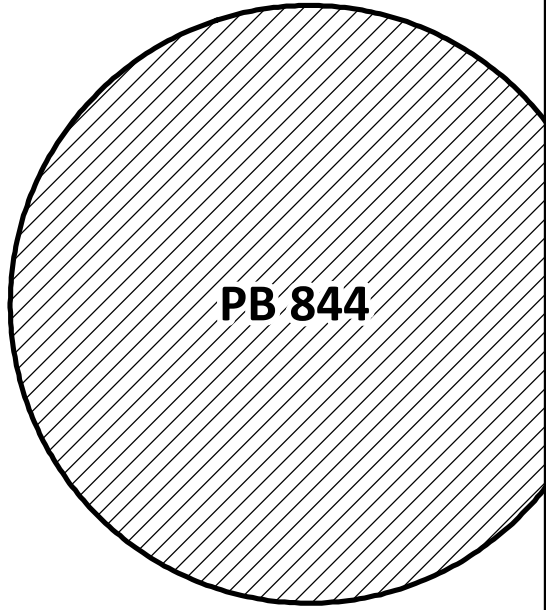
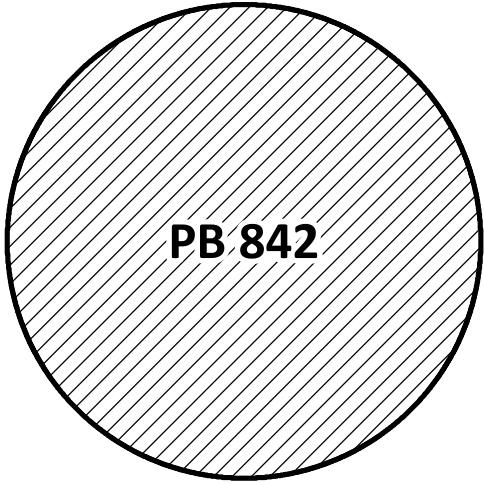
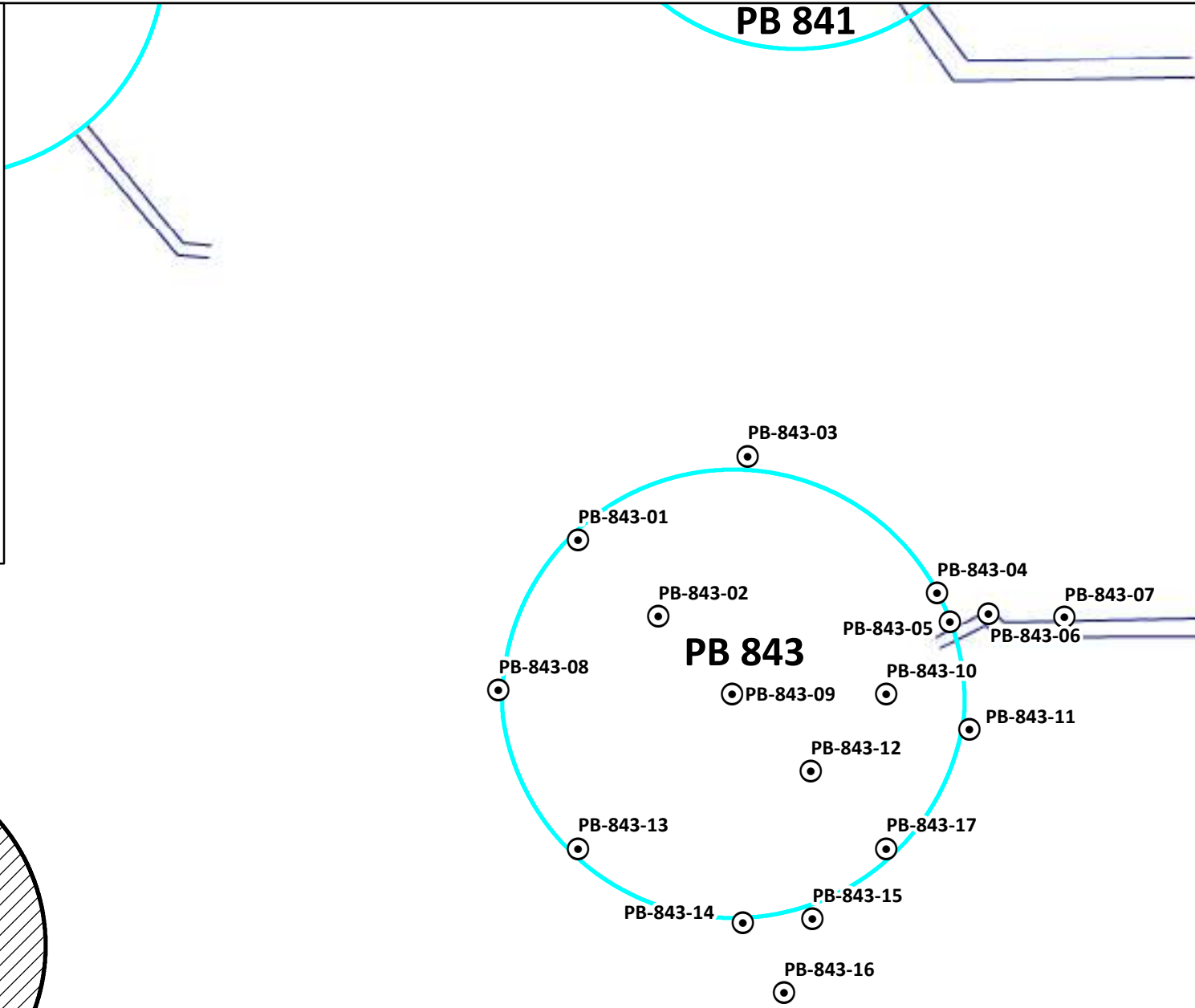
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-843-15	PB-843-15-SS01	4	4.5	Chrysene	SW8270D	Soil	0.24	0.12	7/11/2022	7/13/2022
PB-843-15	PB-843-15-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.12	0.16	7/11/2022	7/13/2022
PB-843-15	PB-843-15-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	0.27	0.12	7/11/2022	7/13/2022
PB-843-15	PB-843-15-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	0.23	0.16	7/11/2022	7/13/2022
PB-843-15	PB-843-15-SS01	4	4.5	Pyrene	SW8270D	Soil	0.39	0.12	7/11/2022	7/13/2022
PB-843-15	PB-843-15-SS01	4	4.5	Anthracene	SW8270D	Soil	0.05	0.12	7/11/2022	7/13/2022
PB-843-15	PB-843-15-SS01	4	4.5	Phenanthrene	SW8270D	Soil	0.19	0.12	7/11/2022	7/13/2022
PB-843-15	PB-843-15-SS01	4	4.5	Lead	SW6010D	Soil	92	2.26	7/11/2022	7/16/2022
PB-843-15	PB-843-15-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/11/2022	7/15/2022
PB-843-15	PB-843-15-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.00097	7/11/2022	7/15/2022
PB-843-15	PB-843-15-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.00097	7/11/2022	7/15/2022
PB-843-15	PB-843-15-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.00048	7/11/2022	7/15/2022
PB-843-15	PB-843-15-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/11/2022	7/15/2022
PB-843-15	PB-843-15-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00097	7/11/2022	7/15/2022
PB-843-15	PB-843-15-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	7/11/2022	7/15/2022
PB-843-15	PB-843-15-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/11/2022	7/15/2022
PB-843-15	PB-843-15-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	0.24	0.12	7/11/2022	7/13/2022
PB-843-15	PB-843-15-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.00097	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00097	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-16	PB-843-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00097	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00048	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00097	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00097	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/11/2022	7/15/2022
PB-843-16	PB-843-16-SS01	3	3.5	Lead	SW6010D	Soil	48.6	4.56	7/11/2022	7/17/2022
PB-843-17	PB-843-17-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	Lead	SW6010D	Soil	11	2.38	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-843-17	PB-843-17-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	0.00055	0.0023	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	Benzene	SW8260C	Soil	0.00024	0.00057	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00057	7/11/2022	7/15/2022
PB-843-17	PB-843-17-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	7/11/2022	7/15/2022

Notes:

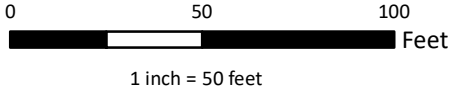
SS -- Soil Sample.

DUP-40 is a field duplicate associated with sample PB-843-11-SS01.

File: N:\GIS\Prj\PO44_001_PESRM-PES\WXDS\AST\Work\Tank Group 04\For AST Closure Report\Figure 12 - 086A (PB 843).mxd 12/30/2022 Created by: JD Checked by: Initial Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



- Legend**
- Tank Group**
 - 04
 - Previously Closed
 - Associated Piping
 - PESRM Soil Sample Location



SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT: Aboveground Storage Tank Closure
	PROJECT NUMBER: P044.001.002

Site Location and Sampling Map 086A (PB 843)
Figure 12



Photograph 1:
View of Tank 086A (PB 843) during demolition.



Photograph 2:
View of Tank 086A (PB 843) during demolition.



Photograph 3:

View of soil following demolition.

Product Movement and Waste Disposal Documentation (Tank 086A)



PES Project Load Ticket

S120103

Load Ticket: 18968

Date: 03/11/11

Sold to: Aluminum **Scrap**
Location: Tankhouse
Carrier: Fuller

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: Tank Plate

- Non-Ferrous**
- Insulated Copper Wire
 - No. 1 Copper Wire
 - Brass
 - Aluminum
 - Stainless, Grade _____
 - Other Alloy, Grade _____
 - Mixed
 - Other: _____

- Condition**
- Prepared
 - Unprepared
 - Green Waste
 - Concrete
 - Masonry
 - Mixed Masonry
 - Wood Only
 - Demo Debris (C&D)
 - Dirt / Fill
 - Sand Fill
 - Crushed Stone
 - Other: _____

Scale Ticket #: _____
Gross Weight: 76180 lbs
Tare Weight: 47006 lbs
Net Weight: 29180 lbs

NorthStar Rep. Signature: [Signature]
Received By: [Signature]

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004 -D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____
Carrier: _____
Truck #: _____
Container #: _____
Manifest #: _____
Profile / Approval #: _____

Scale Info

Scale Ticket #: _____
Gross Weight: _____
Tare weight: _____
Net weight: _____
Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

HILCO REDEVELOPMENT PARTNERS

3144 W. PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20034947

Date: 03/14/2022 8:29 AM

Phone: () -

Fax: () -

Customer: HILCO

HILCO

Order Number: 001

SCRAP REMOVAL

Tons: 133987.016

Loads: 8721

DT06-103 - ALLEGHENY TRUCK 06 W/TRAILER 103

CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	17.09 tn						

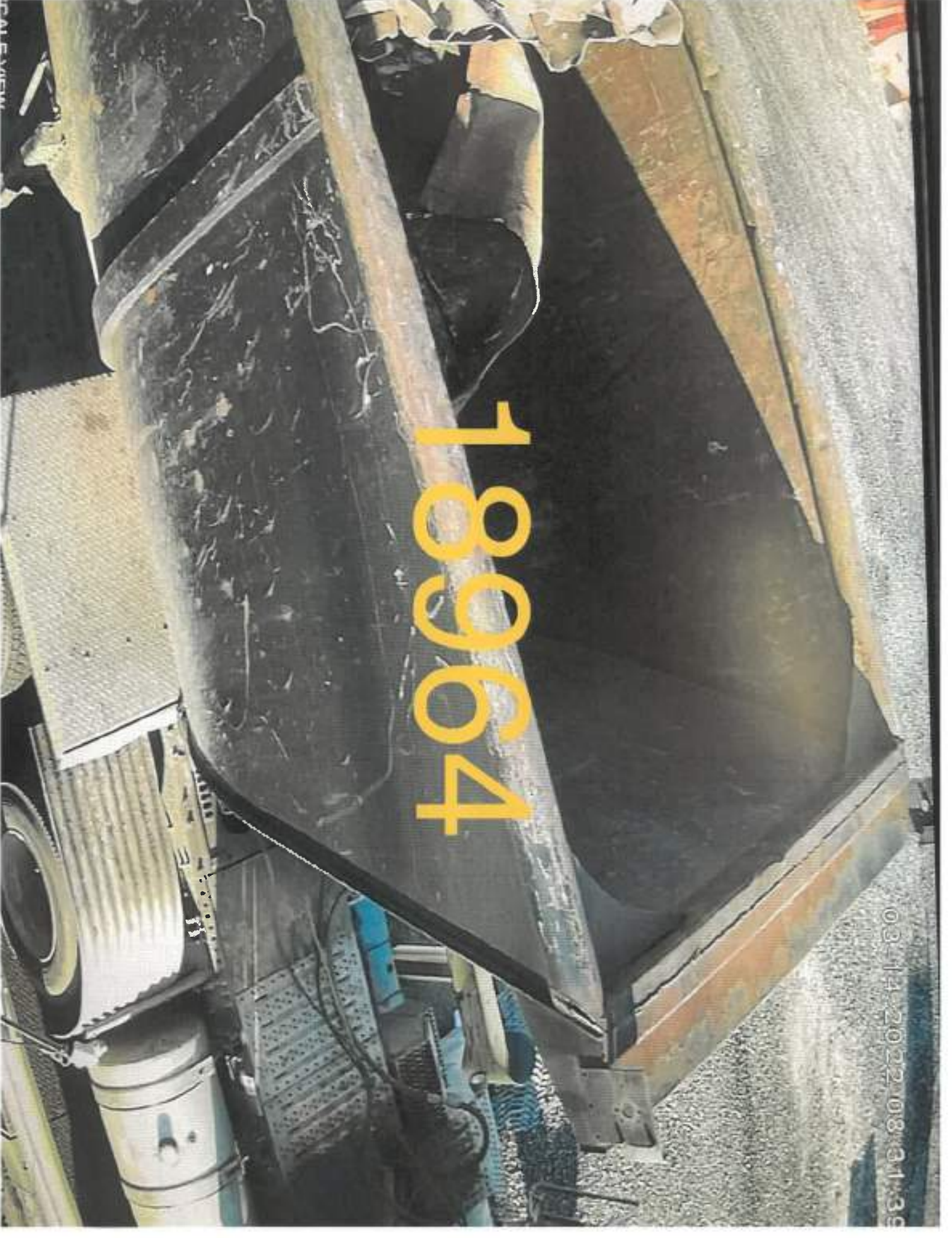
Weight Information

Material	Gross	Tare	Net
SCRAP	78160.00	42000.00	34160.00

18964

03/14/2022 08:31:39

CALIFORNIA



ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 055A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

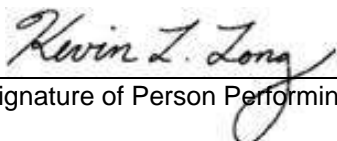
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 7 - 055A (PB 847)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-847-01	PB-847-01-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00085	7/8/2022	7/13/2022
PB-847-01	PB-847-01-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-01	PB-847-01-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-01	PB-847-01-SS01	3	3.5	Lead	SW6010D	Soil	6.08	2.37	7/8/2022	7/15/2022
PB-847-01	PB-847-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-01	PB-847-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00043	7/8/2022	7/13/2022
PB-847-01	PB-847-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00085	7/8/2022	7/13/2022
PB-847-01	PB-847-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-01	PB-847-01-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00043	7/8/2022	7/13/2022
PB-847-01	PB-847-01-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00085	7/8/2022	7/13/2022
PB-847-01	PB-847-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00085	7/8/2022	7/13/2022
PB-847-01	PB-847-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	Toluene	SW8260C	Soil	ND	0.00089	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	DUP-37	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	Lead	SW6010D	Soil	4.52	2.34	7/8/2022	7/15/2022
PB-847-02	DUP-37	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00044	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00089	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	Benzene	SW8260C	Soil	ND	0.00044	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	Cumene	SW8260C	Soil	ND	0.00089	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00089	7/8/2022	7/13/2022
PB-847-02	DUP-37	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00093	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-02	PB-847-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-02	PB-847-02-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	PB-847-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-02	PB-847-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	PB-847-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-02	PB-847-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	PB-847-02-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	PB-847-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-02	PB-847-02-SS01	3	3.5	Lead	SW6010D	Soil	4.67	2.42	7/8/2022	7/15/2022
PB-847-02	PB-847-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00093	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00093	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00046	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00093	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-02	PB-847-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00089	7/8/2022	7/13/2022
PB-847-03	PB-847-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	Lead	SW6010D	Soil	4.07	2.17	7/8/2022	7/15/2022
PB-847-03	PB-847-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-03	PB-847-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-03	PB-847-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-03	PB-847-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	7/8/2022	7/13/2022
PB-847-03	PB-847-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00089	7/8/2022	7/13/2022
PB-847-03	PB-847-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-03	PB-847-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00045	7/8/2022	7/13/2022
PB-847-03	PB-847-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00089	7/8/2022	7/13/2022
PB-847-03	PB-847-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00089	7/8/2022	7/13/2022
PB-847-03	PB-847-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-04	PB-847-04-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00088	7/8/2022	7/13/2022
PB-847-04	PB-847-04-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-04	PB-847-04-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-04	PB-847-04-SS01	3	3.5	Lead	SW6010D	Soil	3.69	2.26	7/8/2022	7/15/2022
PB-847-04	PB-847-04-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-04	PB-847-04-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00044	7/8/2022	7/13/2022
PB-847-04	PB-847-04-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00088	7/8/2022	7/13/2022
PB-847-04	PB-847-04-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-04	PB-847-04-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00044	7/8/2022	7/13/2022
PB-847-04	PB-847-04-SS01	3	3.5							

Table 7 - 055A (PB 847)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-847-05	PB-847-05-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Lead	SW6010D	Soil	3.51	2.23	7/8/2022	7/15/2022
PB-847-05	PB-847-05-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-05	PB-847-05-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.00087	7/8/2022	7/13/2022
PB-847-05	PB-847-05-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.00087	7/8/2022	7/13/2022
PB-847-05	PB-847-05-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.00043	7/8/2022	7/13/2022
PB-847-05	PB-847-05-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-05	PB-847-05-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00087	7/8/2022	7/13/2022
PB-847-05	PB-847-05-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00043	7/8/2022	7/13/2022
PB-847-05	PB-847-05-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-05	PB-847-05-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.11	7/8/2022	7/11/2022
PB-847-05	PB-847-05-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-06	PB-847-06-SS01	3.5	4	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-06	PB-847-06-SS01	3.5	4	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-06	PB-847-06-SS01	3.5	4	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-06	PB-847-06-SS01	3.5	4	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-06	PB-847-06-SS01	3.5	4	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-06	PB-847-06-SS01	3.5	4	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-06	PB-847-06-SS01	3.5	4	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-06	PB-847-06-SS01	3.5	4	Toluene	SW8260C	Soil	ND	0.00086	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-06	PB-847-06-SS01	3.5	4	Lead	SW6010D	Soil	4.69	2.31	7/8/2022	7/15/2022
PB-847-06	PB-847-06-SS01	3.5	4	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	Ethyl Benzene	SW8260C	Soil	ND	0.00086	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	Cumene	SW8260C	Soil	ND	0.00086	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	Benzene	SW8260C	Soil	ND	0.00043	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	1,2-Dichloroethane	SW8260C	Soil	ND	0.00086	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	1,2-Dibromoethane	SW8260C	Soil	ND	0.00043	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/8/2022	7/13/2022
PB-847-06	PB-847-06-SS01	3.5	4	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/8/2022	7/13/2022
PB-847-07	PB-847-07-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	7/8/2022	7/13/2022
PB-847-07	PB-847-07-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/8/2022	7/13/2022
PB-847-07	PB-847-07-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/8/2022	7/13/2022
PB-847-07	PB-847-07-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/8/2022	7/13/2022
PB-847-07	PB-847-07-SS01	4	4.5	Benzene	SW8260C	Soil	0.00029	0.00052	7/8/2022	7/13/2022
PB-847-07	PB-847-07-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/8/2022	7/13/2022
PB-847-07	PB-847-07-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-07	PB-847-07-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	7/8/2022	7/13/2022
PB-847-07	PB-847-07-SS01	4	4.5	Lead	SW6010D	Soil	5.3	4.63	7/8/2022	7/15/2022
PB-847-07	PB-847-07-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.001	7/8/2022	7/13/2022
PB-847-07	PB-847-07-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.001	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0009	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-08	PB-847-08-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0009	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00045	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0009	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0009	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/8/2022	7/13/2022
PB-847-08	PB-847-08-SS01	3	3.5	Lead	SW6010D	Soil	4.46	2.36	7/8/2022	7/15/2022
PB-847-09	PB-847-09-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0012	7/8/2022	7/13/2022
PB-847-09	PB-847-09-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.13	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.13	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.13	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.21	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.21	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.13	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.17	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.13	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.17	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00058	7/8/2022	7/13/2022
PB-847-09	PB-847-09-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.13	7/8/2022	7/11/2022
PB-847-09	PB-847-09-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0023	7/8/2022	7/13/2022
PB-847-09	PB-847-09-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/8/2022	7/13/2022
PB-847-09	PB-847-09-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/8/2022	7/13/2022
PB-847-09	PB-847-09-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/8/2022	7/13/2022
PB-847-09	PB-847-09-SS01	4.5	5	Benzene	SW8260C	Soil	0.00024	0.00058	7/8/2022	7/13/2022
PB-847-09	PB-847-09-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.0012	7/8/2022	7/13/2022

Table 7 - 055A (PB 847)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-847-10	PB-847-10-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-10	PB-847-10-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-10	PB-847-10-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-10	PB-847-10-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-10	PB-847-10-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-10	PB-847-10-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-10	PB-847-10-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-10	PB-847-10-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-10	PB-847-10-SS01	3	3.5	Lead	SW6010D	Soil	5.37	4.8	7/8/2022	7/15/2022
PB-847-10	PB-847-10-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/8/2022	7/13/2022
PB-847-10	PB-847-10-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00098	7/8/2022	7/13/2022
PB-847-10	PB-847-10-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00098	7/8/2022	7/13/2022
PB-847-10	PB-847-10-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00049	7/8/2022	7/13/2022
PB-847-10	PB-847-10-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/8/2022	7/13/2022
PB-847-10	PB-847-10-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00098	7/8/2022	7/13/2022
PB-847-10	PB-847-10-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00049	7/8/2022	7/13/2022
PB-847-10	PB-847-10-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/8/2022	7/13/2022
PB-847-10	PB-847-10-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/8/2022	7/13/2022
PB-847-10	PB-847-10-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-11	PB-847-11-SS01	3	3.5	Lead	SW6010D	Soil	4.97	4.44	7/8/2022	7/15/2022
PB-847-11	PB-847-11-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/8/2022	7/13/2022
PB-847-11	PB-847-11-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00049	7/8/2022	7/13/2022
PB-847-11	PB-847-11-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00098	7/8/2022	7/13/2022
PB-847-11	PB-847-11-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/8/2022	7/13/2022
PB-847-11	PB-847-11-SS01	3	3.5	Cumene	SW8260C	Soil	0.00012	0.00098	7/8/2022	7/13/2022
PB-847-11	PB-847-11-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00098	7/8/2022	7/13/2022
PB-847-11	PB-847-11-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.0035	0.002	7/8/2022	7/13/2022
PB-847-11	PB-847-11-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00098	7/8/2022	7/13/2022
PB-847-11	PB-847-11-SS01	3	3.5	Benzene	SW8260C	Soil	0.00047	0.00049	7/8/2022	7/13/2022
PB-847-11	PB-847-11-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/8/2022	7/13/2022
PB-847-12	PB-847-12-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.00087	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.19	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00043	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	Lead	SW6010D	Soil	6.35	4.54	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-12	PB-847-12-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.02	0.0017	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	0.0009	0.0017	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00087	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.054	0.0017	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00043	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	Cumene	SW8260C	Soil	0.013	0.00087	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.0028	0.00087	7/8/2022	7/15/2022
PB-847-12	PB-847-12-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	Phenanthrene	SW8270D	Soil	0.29	0.12	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	Naphthalene	SW8270D	Soil	0.13	0.19	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	Fluorene	SW8270D	Soil	0.12	0.19	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-13	PB-847-13-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.21	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	0.23	0.43	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.11	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	Lead	SW6010D	Soil	3.88	2.3	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	1.4	0.43	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	Benzene	SW8260C	Soil	0.051	0.11	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	Cumene	SW8260C	Soil	0.94	0.21	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	0.2	0.21	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.43	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.21	7/8/2022	7/15/2022
PB-847-13	PB-847-13-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	2.2	0.43	7/8/2022	7/15/2022
PB-847-14	PB-847-14-SS01	3.5	4	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	Naphthalene	SW8270D	Soil	0.043	0.2	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	Lead	SW6010D	Soil	5.24	4.85	7/8/2022	7/15/2022
PB-847-14	PB-847-14-SS01	3.5	4	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-14	PB-847-14-SS01	3.5	4	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.5	7/8/2022	7/13/2022
PB-847-14	PB-847-14-SS01	3.5	4	Toluene	SW8260C	Soil	ND	0.25	7/8/2022	7/13/2022
PB-847-14	PB-847-14-SS01	3.5	4	Methyl tert-butyl ether	SW8260C	Soil	ND	0.5	7/8/2022	7/13/2022
PB-847-14	PB-847-14-SS01	3.5	4	Ethyl Benzene	SW8260C	Soil	ND	0.25	7/8/2022	7/13/2022
PB-847-14	PB-847-14-SS01	3.5	4	Cumene	SW8260C	Soil	1.3	0.25	7/8/2022	7/13/2022
PB-847-14	PB-847-14-SS01	3.5	4	Benzene	SW8260C	Soil	ND	0.12	7/8/2022	7/13/2022
PB-847-14	PB-847-14-SS01	3.5	4	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.5	7/8/2022	7/13/2022
PB-847-14	PB-847-14-SS01	3.5	4	1,2-Dichloroethane	SW8260C	Soil	ND	0.25	7/8/2022	7/1

Table 7 - 055A (PB 847)

Sample/Analysis Information (Attachment for Section III.)

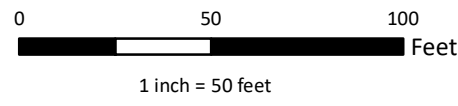
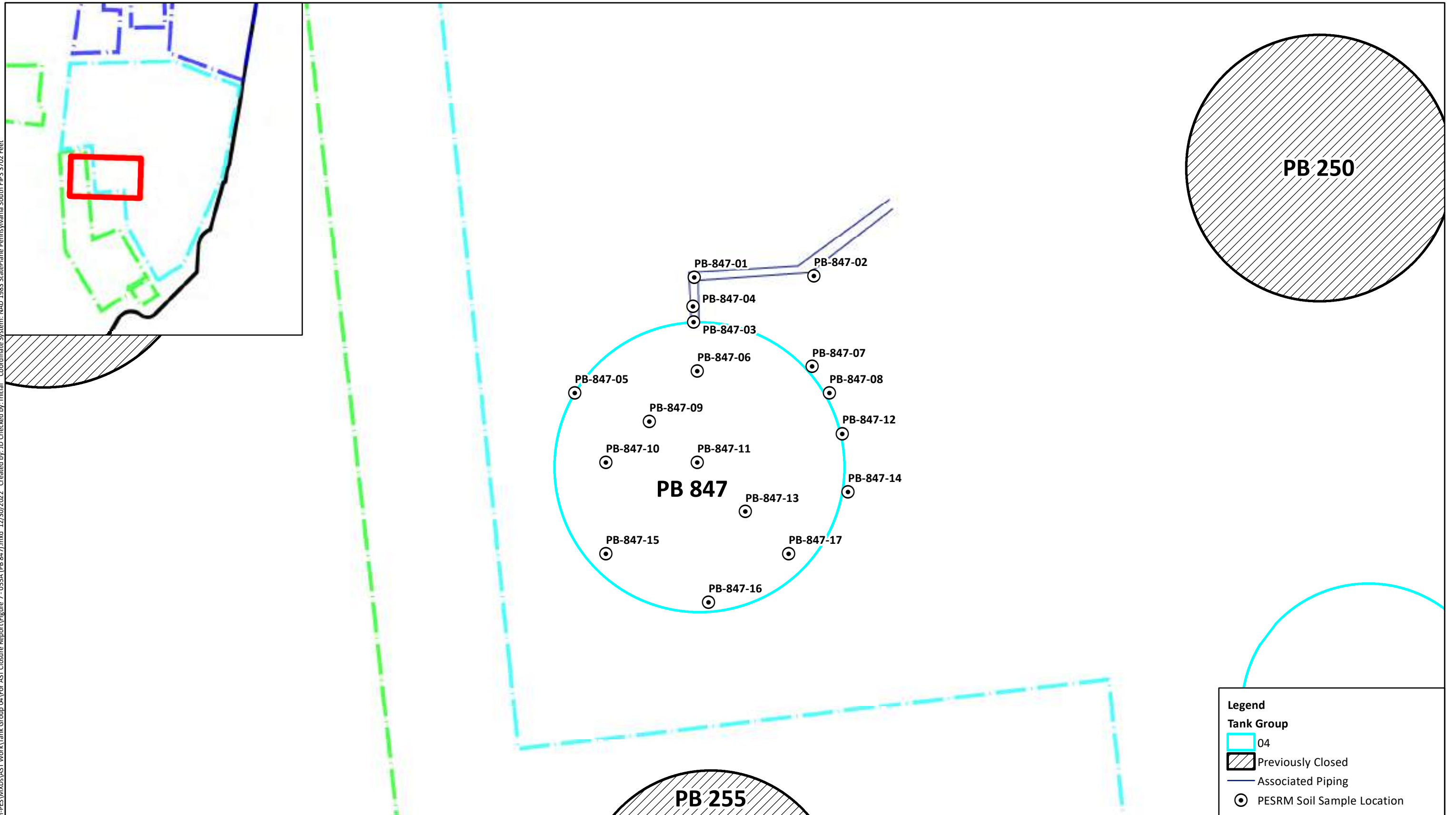
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-847-15	PB-847-15-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	1.5	7/8/2022	7/15/2022
PB-847-15	PB-847-15-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	1.1	7/8/2022	7/15/2022
PB-847-15	PB-847-15-SS01	4	4.5	Fluorene	SW8270D	Soil	5.3	1.9	7/8/2022	7/15/2022
PB-847-15	PB-847-15-SS01	4	4.5	Naphthalene	SW8270D	Soil	7	1.9	7/8/2022	7/15/2022
PB-847-15	PB-847-15-SS01	4	4.5	Lead	SW6010D	Soil	5.06	4.52	7/8/2022	7/15/2022
PB-847-15	PB-847-15-SS01	4	4.5	Pyrene	SW8270D	Soil	0.5	1.1	7/8/2022	7/15/2022
PB-847-15	PB-847-15-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.23	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	Phenanthrene	SW8270D	Soil	12	1.1	7/8/2022	7/15/2022
PB-847-15	PB-847-15-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.46	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	0.24	0.23	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	Cumene	SW8260C	Soil	1.2	0.23	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	Benzene	SW8260C	Soil	0.063	0.12	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	1.8	0.46	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.23	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.12	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	2.8	0.46	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	0.27	0.46	7/8/2022	7/13/2022
PB-847-15	PB-847-15-SS01	4	4.5	Anthracene	SW8270D	Soil	1.7	1.1	7/8/2022	7/15/2022
PB-847-16	PB-847-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-16	PB-847-16-SS01	3	3.5	Lead	SW6010D	Soil	5.17	2.4	7/8/2022	7/15/2022
PB-847-16	PB-847-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/8/2022	7/13/2022
PB-847-16	PB-847-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/8/2022	7/13/2022
PB-847-16	PB-847-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00047	7/8/2022	7/13/2022
PB-847-16	PB-847-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00094	7/8/2022	7/13/2022
PB-847-16	PB-847-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/8/2022	7/13/2022
PB-847-16	PB-847-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00047	7/8/2022	7/13/2022
PB-847-16	PB-847-16-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00094	7/8/2022	7/13/2022
PB-847-16	PB-847-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00094	7/8/2022	7/13/2022
PB-847-16	PB-847-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/8/2022	7/13/2022
PB-847-16	PB-847-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00094	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	Toluene	SW8260C	Soil	0.00073	0.0011	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	Phenanthrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	Naphthalene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	Fluorene	SW8270D	Soil	ND	0.2	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	Chrysene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	Pyrene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	1,2,4-Trimethylbenzene	SW8260C	Soil	0.11	0.0021	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	Anthracene	SW8270D	Soil	ND	0.12	7/8/2022	7/11/2022
PB-847-17	PB-847-17-SS01	3.5	4	Lead	SW6010D	Soil	5.26	4.7	7/8/2022	7/15/2022
PB-847-17	PB-847-17-SS01	3.5	4	Xylenes (total)	SW8260C	Soil	0.0167	0.0021	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	1,2-Dibromoethane	SW8260C	Soil	ND	0.00053	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0088	0.0021	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	Benzene	SW8260C	Soil	0.0042	0.00053	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	Cumene	SW8260C	Soil	0.027	0.0011	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	Ethyl Benzene	SW8260C	Soil	0.018	0.0011	7/8/2022	7/13/2022
PB-847-17	PB-847-17-SS01	3.5	4	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	7/8/2022	7/13/2022


Notes:

SS -- Soil Sample.

DUP-37 is a field duplicate associated with sample PB-847-02-SS01.

File: N:\GIS\Prj\PO44_001_PESRM-PES\MXDS\AST\Work\Tank Group 04\For AST Closure Report\Figure 7_055A (PB 847).mxd 12/30/2022 Created by: JD Checked by: Initial Coordinate System: NAD_1983 StatePlane Pennsylvania South FIPS 3702 Feet



SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Site Location and Sampling Map 055A (PB 847) Figure 7
	PROJECT: Aboveground Storage Tank Closure	
PROJECT NUMBER: P044.001.002		



Photograph 1:
View of Tank 055A (PB 847) during demolition.



Photograph 2:
View of Tank 055A (PB 847) during demolition.





Photograph 3:

View of scrap piles and the concrete pad during demolition.



Photograph 4:

View of scrap piles during demolition.

	<p>Photograph 5: View of the pad during demolition.</p>
	<p>Photograph 6: View of soil following demolition.</p>

Product Movement and Waste Disposal Documentation (Tank 055A)



PES Project Load Ticket

S170103.

Load Ticket: 15654A

Date: 01-31-22

Sold to: Allegany Strap
Location: Tank SHF
Carrier: Allegany

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: Tank Plate

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade _____
- Other Alloy, Grade _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / Fill
- Sand Fill
- Crushed Stone
- Other: _____

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004 - D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

Scale Ticket #: _____

Gross Weight: 61746 lbs

Tare Weight: 47200 lbs

Net Weight: 14546 lbs

NorthStar Rep. Signature: [Signature]

Received By: [Signature]

HILCO REDEVELOPMENT PARTNERS

3144 W. PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20033819

Date: 01/31/2022 9:41 AM

Phone: () -

Fax: () -

Customer: HILCO

HILCO

Order Number: 001

SCRAP REMOVAL

Tons: 116672.561

Loads: 7593

DT327-1109 - ALLEGHENY TRUCK 327-1109

CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	\$ 67 tn						

Weight Information

Material	Gross	Tare	Net
SCRAP	61740.00	42400.00	19340.00

15654

WINKLER

104
ALY

ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 088A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

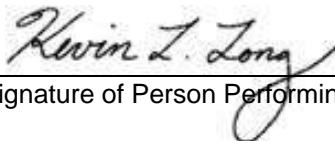
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

Section III

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 13 - 088A (PB 848)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-848-01	PB-848-01-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-848-01	PB-848-01-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/11/2022	7/14/2022
PB-848-01	PB-848-01-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-01	PB-848-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.00155	0.0023	7/11/2022	7/14/2022
PB-848-01	PB-848-01-SS01	3	3.5	Lead	SW6010D	Soil	6.75	2.41	7/11/2022	7/16/2022
PB-848-01	PB-848-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00058	7/11/2022	7/14/2022
PB-848-01	PB-848-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-848-01	PB-848-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00026	0.0023	7/11/2022	7/14/2022
PB-848-01	PB-848-01-SS01	3	3.5	Benzene	SW8260C	Soil	0.001	0.00058	7/11/2022	7/14/2022
PB-848-01	PB-848-01-SS01	3	3.5	Cumene	SW8260C	Soil	0.00014	0.0012	7/11/2022	7/14/2022
PB-848-01	PB-848-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-848-01	PB-848-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00094	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-848-02	PB-848-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-848-02	PB-848-02-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-02	PB-848-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-848-02	PB-848-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-02	PB-848-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-848-02	PB-848-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-02	PB-848-02-SS01	3	3.5	Pyrene	SW8270D	Soil	0.029	0.12	7/11/2022	7/13/2022
PB-848-02	PB-848-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-02	PB-848-02-SS01	3	3.5	Lead	SW6010D	Soil	26.2	4.38	7/11/2022	7/18/2022
PB-848-02	PB-848-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00094	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00094	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00047	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00094	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00047	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/11/2022	7/14/2022
PB-848-02	PB-848-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Pyrene	SW8270D	Soil	0.024	0.11	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-03	PB-848-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	Lead	SW6010D	Soil	51.6	4.24	7/11/2022	7/17/2022
PB-848-03	PB-848-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/11/2022	7/14/2022
PB-848-03	PB-848-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/11/2022	7/13/2022
PB-848-03	PB-848-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/11/2022	7/14/2022
PB-848-03	PB-848-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/11/2022	7/14/2022
PB-848-03	PB-848-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-03	PB-848-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/11/2022	7/14/2022
PB-848-03	PB-848-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00055	7/11/2022	7/14/2022
PB-848-03	PB-848-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-03	PB-848-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-03	PB-848-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.25	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	Phenanthrene	SW8270D	Soil	1.9	0.12	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	Naphthalene	SW8270D	Soil	1.4	0.2	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	Fluorene	SW8270D	Soil	2.3	0.2	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	4.3	0.51	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	Anthracene	SW8270D	Soil	0.29	0.12	7/11/2022	7/13/2022
PB-848-04	PB-848-04-SS01	4	4.5	Lead	SW6010D	Soil	716	2.44	7/11/2022	7/16/2022
PB-848-04	PB-848-04-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	3.82	0.51	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.13	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.25	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	2.7	0.51	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	Benzene	SW8260C	Soil	1.8	0.13	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	Cumene	SW8260C	Soil	0.46	0.25	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	0.9	0.25	7/11/2022	7/14/2022
PB-848-04	PB-848-04-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.51	7/11/2022	7/14/2022
PB-848-05	DUP-39	3	3.5	Toluene	SW8260C	Soil	ND	0.00098	7/11/2022	7/15/2022
PB-848-05	DUP-39	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-05	DUP-39	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-05	DUP-39	3	3.5	Chrysene	SW8270D	Soil	0.048	0.12	7/11/2022	7/13/2022
PB-848-05	DUP-39	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.026	0.16	7/11/2022	7/13/2022
PB-848-05	DUP-39	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.053	0.12	7/11/2022	7/13/2022
PB-848-05	DUP-39	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.048	0.16	7/11/2022	7/13/2022
PB-848-05	DUP-39	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.055	0.12	7/11/2022	7/13/2022
PB-848-05	DUP-39	3	3.5	Pyrene	SW8270D	Soil	0.08	0.12	7/11/2022	7/13/2022
PB-848-05	DUP-39	3	3.5	Phenanthrene	SW8270D	Soil	0.091	0.12	7/11/2022	7/13/2022
PB-848-05	DUP-39	3	3.5	Lead	SW6010D	Soil	18.8	2.22	7/11/2022	7/16/2022
PB-848-05	DUP-39	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.00057	0.002	7/11/2022	7/15/2022
PB-848-05	DUP-39	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00098	7/11/2022	7/15/2022
PB-848-05	DUP-39	3	3.5	Cumene	SW8260C	Soil	ND	0.00098	7/11/2022	7/15/2022
PB-848-05	DUP-39	3	3.5	Benzene	SW8260C	Soil	ND	0.00049	7/11/2022	7/15/2022
PB-848-05	DUP-39	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-848-05	DUP-39	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00098	7/11/2022	7/15/20

Table 13 - 088A (PB 848)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-848-05	PB-848-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-05	PB-848-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-05	PB-848-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-05	PB-848-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-05	PB-848-05-SS01	3	3.5	Fluorene	SW8270D	Soil	0.069	0.2	7/11/2022	7/13/2022
PB-848-05	PB-848-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.034	0.2	7/11/2022	7/13/2022
PB-848-05	PB-848-05-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-05	PB-848-05-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.054	0.12	7/11/2022	7/13/2022
PB-848-05	PB-848-05-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00056	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-05	PB-848-05-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00056	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.00074	0.0022	7/11/2022	7/14/2022
PB-848-05	PB-848-05-SS01	3	3.5	Lead	SW6010D	Soil	8.21	4.59	7/11/2022	7/17/2022
PB-848-06	PB-848-06-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.032	7/11/2022	7/15/2022
PB-848-06	PB-848-06-SS01	4.5	5	Fluorene	SW8270D	Soil	0.14	0.2	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	Naphthalene	SW8270D	Soil	1.7	0.2	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.15	0.12	7/11/2022	7/13/2022
PB-848-06	PB-848-06-SS01	4.5	5	Lead	SW6010D	Soil	7.2	2.39	7/11/2022	7/16/2022
PB-848-06	PB-848-06-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.13	7/11/2022	7/15/2022
PB-848-06	PB-848-06-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	35	1.3	7/11/2022	7/14/2022
PB-848-06	PB-848-06-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.16	0.13	7/11/2022	7/15/2022
PB-848-06	PB-848-06-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.064	7/11/2022	7/15/2022
PB-848-06	PB-848-06-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.032	7/11/2022	7/15/2022
PB-848-06	PB-848-06-SS01	4.5	5	Cumene	SW8260C	Soil	3	0.064	7/11/2022	7/15/2022
PB-848-06	PB-848-06-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	1	0.064	7/11/2022	7/15/2022
PB-848-06	PB-848-06-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.13	7/11/2022	7/15/2022
PB-848-06	PB-848-06-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.064	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	Toluene	SW8260C	Soil	0.087	0.067	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	0.562	0.13	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	Naphthalene	SW8270D	Soil	0.26	0.2	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	Fluorene	SW8270D	Soil	0.089	0.2	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	Chrysene	SW8270D	Soil	0.028	0.12	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	0.064	0.16	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	0.049	0.12	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	0.065	0.16	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	0.025	0.12	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.059	0.12	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	2.2	0.13	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	Lead	SW6010D	Soil	3200	4.73	7/11/2022	7/17/2022
PB-848-07	PB-848-07-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-07	PB-848-07-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.034	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.067	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	1	0.13	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	Benzene	SW8260C	Soil	0.14	0.034	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	Cumene	SW8260C	Soil	1.1	0.067	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	1.6	0.067	7/11/2022	7/15/2022
PB-848-07	PB-848-07-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.13	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	0.00133	0.0018	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Lead	SW6010D	Soil	246	4.7	7/11/2022	7/17/2022
PB-848-08	PB-848-08-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.037	0.0018	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-08	PB-848-08-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.00092	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00092	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0047	0.0018	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	Benzene	SW8260C	Soil	0.0003	0.00046	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	Cumene	SW8260C	Soil	0.0099	0.00092	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.0067	0.00092	7/11/2022	7/15/2022
PB-848-08	PB-848-08-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/11/2022	7/15/2022
PB-848-09	PB-848-09-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.034	0.12	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-09	PB-848-09-SS01	4.5	5	Lead	SW6010D	Soil	1140	2.41	7/11/2022	7/16/2022
PB-848-09	PB-848-09-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.00098	7/11/2022	7/15/2022
PB-848-09	PB-848-09-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/11/2022	7/15/2022
PB-848-09	PB-848-09-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.00046	0.00098	7/11/2022	7/15/2022
PB-848-09	PB-848-09-SS01	4.5	5	Cumene	SW8260C	Soil	0.0011	0.00098	7/11/2022	7/15/2022
PB-848-09	PB-848-09-SS01	4.5	5	Benzene	SW8260C	Soil	0.00022	0.00049	7/11/2022	7/15/2022
PB-848-09	PB-848-09-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0002			

Table 13 - 088A (PB 848)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-848-10	PB-848-10-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-848-10	PB-848-10-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.18	7/11/2022	7/13/2022
PB-848-10	PB-848-10-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-848-10	PB-848-10-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.23	7/11/2022	7/13/2022
PB-848-10	PB-848-10-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.23	7/11/2022	7/13/2022
PB-848-10	PB-848-10-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-848-10	PB-848-10-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-848-10	PB-848-10-SS01	4.5	5	Lead	SW6010D	Soil	721	5.48	7/11/2022	7/17/2022
PB-848-10	PB-848-10-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0025	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.0024	0.0012	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	Cumene	SW8260C	Soil	0.0066	0.0012	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	Benzene	SW8260C	Soil	0.00052	0.00063	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00047	0.0025	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00063	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.00081	0.0025	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0025	7/11/2022	7/14/2022
PB-848-10	PB-848-10-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.14	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.029	0.11	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.037	0.11	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.039	0.15	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Chrysene	SW8270D	Soil	0.034	0.11	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Fluorene	SW8270D	Soil	0.25	0.19	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.35	0.11	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Anthracene	SW8270D	Soil	0.081	0.11	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	Pyrene	SW8270D	Soil	0.058	0.11	7/11/2022	7/13/2022
PB-848-11	PB-848-11-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.12	0.14	7/11/2022	7/14/2022
PB-848-11	PB-848-11-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.394	0.14	7/11/2022	7/14/2022
PB-848-11	PB-848-11-SS01	3	3.5	Lead	SW6010D	Soil	15	2.24	7/11/2022	7/16/2022
PB-848-11	PB-848-11-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.034	7/11/2022	7/14/2022
PB-848-11	PB-848-11-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.068	7/11/2022	7/14/2022
PB-848-11	PB-848-11-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.076	0.14	7/11/2022	7/14/2022
PB-848-11	PB-848-11-SS01	3	3.5	Benzene	SW8260C	Soil	0.87	0.034	7/11/2022	7/14/2022
PB-848-11	PB-848-11-SS01	3	3.5	Cumene	SW8260C	Soil	0.29	0.068	7/11/2022	7/14/2022
PB-848-11	PB-848-11-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.16	0.068	7/11/2022	7/14/2022
PB-848-11	PB-848-11-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.14	7/11/2022	7/14/2022
PB-848-11	PB-848-11-SS01	3	3.5	Toluene	SW8260C	Soil	0.12	0.068	7/11/2022	7/14/2022
PB-848-12	PB-848-12-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-848-12	PB-848-12-SS01	4	4.5	Phenanthrene	SW8270D	Soil	0.68	0.12	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	Naphthalene	SW8270D	Soil	0.043	0.21	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	Fluorene	SW8270D	Soil	0.13	0.21	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	Chrysene	SW8270D	Soil	0.3	0.12	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.11	0.16	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	0.36	0.12	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	0.3	0.16	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	0.33	0.12	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	Pyrene	SW8270D	Soil	0.51	0.12	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/11/2022	7/15/2022
PB-848-12	PB-848-12-SS01	4	4.5	Anthracene	SW8270D	Soil	0.19	0.12	7/11/2022	7/13/2022
PB-848-12	PB-848-12-SS01	4	4.5	Lead	SW6010D	Soil	282	2.36	7/11/2022	7/16/2022
PB-848-12	PB-848-12-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/11/2022	7/15/2022
PB-848-12	PB-848-12-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/11/2022	7/15/2022
PB-848-12	PB-848-12-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-848-12	PB-848-12-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/11/2022	7/15/2022
PB-848-12	PB-848-12-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.00055	7/11/2022	7/15/2022
PB-848-12	PB-848-12-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-848-12	PB-848-12-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/11/2022	7/15/2022
PB-848-12	PB-848-12-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/11/2022	7/15/2022
PB-848-13	PB-848-13-SS01	4.5	5	Toluene	SW8260C	Soil	0.039	0.072	7/11/2022	7/14/2022
PB-848-13	PB-848-13-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Pyrene	SW8270D	Soil	0.022	0.12	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Lead	SW6010D	Soil	28.5	2.46	7/11/2022	7/16/2022
PB-848-13	PB-848-13-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.14	7/11/2022	7/14/2022
PB-848-13	PB-848-13-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.018	0.072	7/11/2022	7/14/2022
PB-848-13	PB-848-13-SS01	4.5	5	Cumene	SW8260C	Soil	0.01	0.072	7/11/2022	7/14/2022
PB-848-13	PB-848-13-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.036	7/11/2022	7/14/2022
PB-848-13	PB-848-13-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.14	7/11/2022	7/14/2022
PB-848-13	PB-848-13-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.072	7/11/2022	7/14/2022
PB-848-13	PB-848-13-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.036	7/11/2022	7/14/2022
PB-848-13	PB-848-13-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.14	7/11/2022	7/14/2022
PB-848-13	PB-848-13-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-13	PB-848-13-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.14	7/11/2022	7/14/2022
PB-848-14	PB-848-14-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-14	PB-848-14-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-14	PB-848-14-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-14	PB-848-14-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-14	PB-848-14-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-14	PB-848-14-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.21	7/11/2022	7/13/2022
PB-848-14	PB-848-14-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.21	7/11/2022	7/13/2022
PB-848-14	PB-848-14-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-14	PB-848-14-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-14	PB-848-14-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-14	PB-848-14-SS01	4.5	5	Lead	SW6010D	Soil	15.7	2.42	7/11/2022	7/16/2022
PB-848-14	PB-848-14-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	7/11/2022	7/14/2022
PB-848-14	PB-848-14-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.00017	0.0011	7/11/2022	7/14/2022
PB-848-14	PB-848-14-SS01	4.5	5	Cumene	SW8260C	Soil	0.00079	0.0011	7/11/2022	7/14/2022
PB-848-14	PB-848-14-SS01	4.5	5	Benzene	SW8260C	Soil	0.00019	0.00056	7/11/2022	7/14/2022
PB-848-14	PB-848-14-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/11/2022	7/14/2022
PB-848-14	PB-848-14-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/11/2022	7/14/2022
PB-848-14	PB-848-14-SS01	4.5	5	1,2-Dibromoethane</						

Table 13 - 088A (PB 848)

Sample/Analysis Information (Attachment for Section III.)

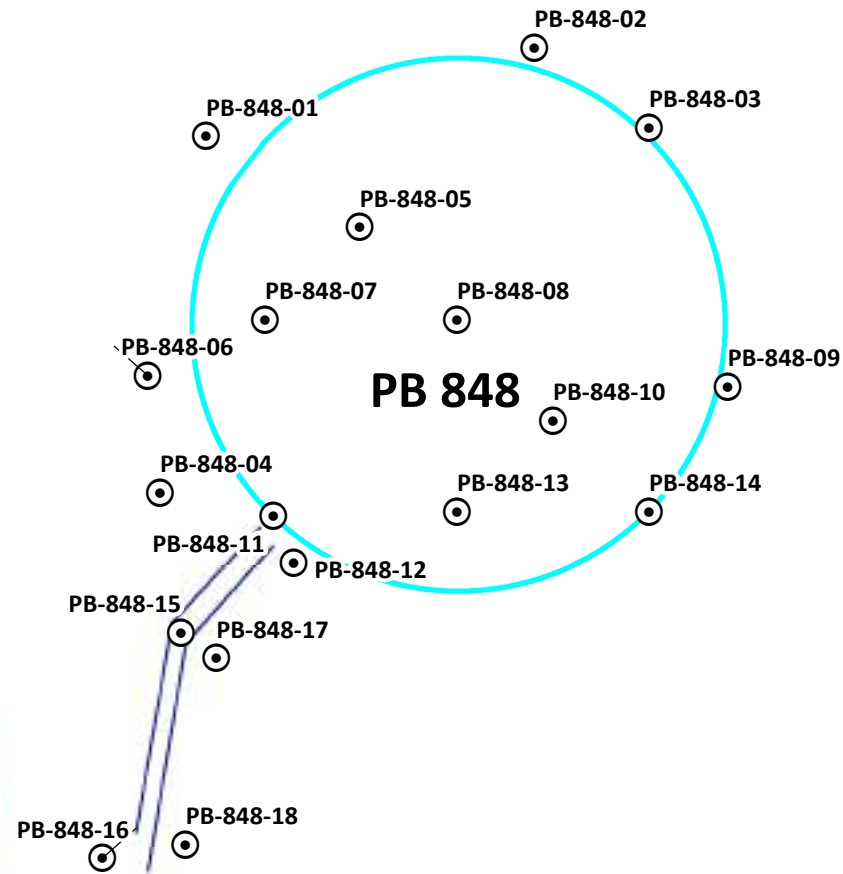
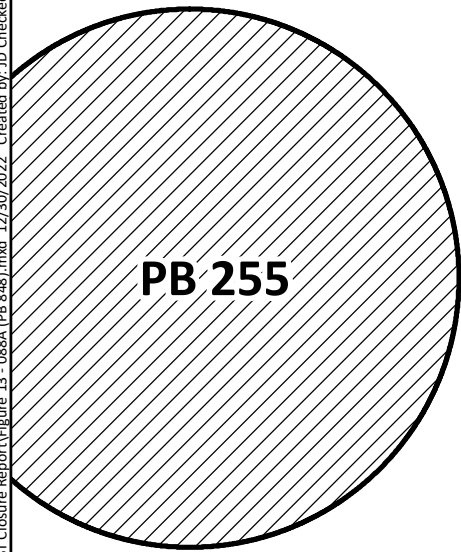
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-848-15	PB-848-15-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-15	PB-848-15-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-15	PB-848-15-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-15	PB-848-15-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-15	PB-848-15-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-15	PB-848-15-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-15	PB-848-15-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-15	PB-848-15-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	7.7	0.11	7/11/2022	7/15/2022
PB-848-15	PB-848-15-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	38.038	2.2	7/11/2022	7/15/2022
PB-848-15	PB-848-15-SS01	4.5	5	Lead	SW6010D	Soil	9.28	2.29	7/11/2022	7/16/2022
PB-848-15	PB-848-15-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.028	7/11/2022	7/15/2022
PB-848-15	PB-848-15-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.055	7/11/2022	7/15/2022
PB-848-15	PB-848-15-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	4	0.11	7/11/2022	7/15/2022
PB-848-15	PB-848-15-SS01	4.5	5	Benzene	SW8260C	Soil	1.1	0.028	7/11/2022	7/15/2022
PB-848-15	PB-848-15-SS01	4.5	5	Cumene	SW8260C	Soil	2.4	0.055	7/11/2022	7/15/2022
PB-848-15	PB-848-15-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	16	0.055	7/11/2022	7/15/2022
PB-848-15	PB-848-15-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.11	7/11/2022	7/15/2022
PB-848-15	PB-848-15-SS01	4.5	5	Toluene	SW8260C	Soil	0.078	0.055	7/11/2022	7/15/2022
PB-848-16	PB-848-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-848-16	PB-848-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/11/2022	7/14/2022
PB-848-16	PB-848-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-16	PB-848-16-SS01	3	3.5	Lead	SW6010D	Soil	6.41	2.32	7/11/2022	7/16/2022
PB-848-16	PB-848-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/11/2022	7/14/2022
PB-848-16	PB-848-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0006	7/11/2022	7/14/2022
PB-848-16	PB-848-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-848-16	PB-848-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/11/2022	7/14/2022
PB-848-16	PB-848-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0006	7/11/2022	7/14/2022
PB-848-16	PB-848-16-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-848-16	PB-848-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/11/2022	7/14/2022
PB-848-16	PB-848-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0015	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.34	0.12	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.026	0.2	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	Chrysene	SW8270D	Soil	4.4	0.12	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	5.2	0.16	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	4.4	0.12	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	7.2	0.16	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	4.5	0.12	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	Pyrene	SW8270D	Soil	0.79	0.12	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0031	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	Anthracene	SW8270D	Soil	0.09	0.12	7/11/2022	7/13/2022
PB-848-17	PB-848-17-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0031	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	Lead	SW6010D	Soil	1840	2.29	7/11/2022	7/16/2022
PB-848-17	PB-848-17-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00077	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0015	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0031	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00077	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0015	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0015	7/11/2022	7/14/2022
PB-848-17	PB-848-17-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0031	7/11/2022	7/14/2022
PB-848-18	PB-848-18-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.054	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-18	PB-848-18-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/11/2022	7/13/2022
PB-848-18	PB-848-18-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-18	PB-848-18-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-18	PB-848-18-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-18	PB-848-18-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/11/2022	7/13/2022
PB-848-18	PB-848-18-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-18	PB-848-18-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-18	PB-848-18-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022
PB-848-18	PB-848-18-SS01	4.5	5	Lead	SW6010D	Soil	60.7	11.4	7/11/2022	7/17/2022
PB-848-18	PB-848-18-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.11	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.017	0.054	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	Cumene	SW8260C	Soil	0.06	0.054	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	Benzene	SW8260C	Soil	0.01	0.027	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.011	0.11	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.054	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.027	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.058	0.11	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	0.083	0.11	7/11/2022	7/18/2022
PB-848-18	PB-848-18-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/11/2022	7/13/2022

Notes:

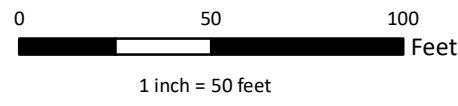
SS -- Soil Sample.

DUP-39 is a field duplicate associated with sample PB-848-05-SS01.

File: N:\GIS\Prj\PO44_001_PESRM-PES\MXDS\AST\Work\Tank Group 04\Fer AST Closure Report\Figure 13 - 088A (PB 848).mxd 12/30/2022 Created by: ID Checked by: Initial Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Legend	
	Tank Group 04
	Previously Closed
	Associated Piping
	PESRM Soil Sample Location



SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC
	PROJECT: Aboveground Storage Tank Closure
	PROJECT NUMBER: P044.001.002

Site Location and Sampling Map 088A (PB 848)
Figure 13



Photograph 1:
View of Tank 088A (PB 848) during demolition.



Photograph 2:
View of Tank 088A (PB 848) during demolition.



Photograph 3:
View of scrap piles and Tank 088A (PB 848) during demolition.



Photograph 4:
View of scrap piles during demolition.



Photograph 5:

View of the tank pad following demolition.



Photograph 6:

View of soil beneath the tank pad following demolition.

Product Movement and Waste Disposal Documentation (Tank 088A)



PES Project Load Ticket

S/20103

Load Ticket: 15244/j

Date: 01-18-27

Sold to: Highway Scrap
Location: Tail 848
Carrier: Highway

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

Waste Stream

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: Tank Plate

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004 - D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

- Non-Ferrous
- Insulated Copper Wire
 - No. 1 Copper Wire
 - Brass
 - Aluminum
 - Stainless, Grade _____
 - Other Alloy, Grade _____
 - Mixed
 - Other: _____

Disposal Facility: _____

- Condition
- Prepared
 - Unprepared
 - Green Waste
 - Concrete
 - Masonry
 - Mixed Masonry
 - Wood Only
 - Demo Debris (C&D)
 - Dirt / Fill
 - Sand Fill
 - Crushed Stone
 - Other: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____
 Gross Weight: 77000lb
 Tare Weight: 38760lb
 Net Weight: 38240lb *CPE*
 NorthStar Rep. Signature: [Signature]
 Received By: [Signature]

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

HILCO REDEVELOPEMENT PARTNERS

3144 W PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20033428

Date: 01/18/2022 7:39 AM

Phone: () -

Fax: () -

Customer HILCO

HILCO

Order Number: 001

SCRAP REMOVAL

Tons: 111046.576

Loads: 7202

DT261-2 - ALLEGHENY TRUCK 261 W/TRAILER 2

CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	19.12 tn						

Weight Information

Material	Gross	Tare	Net
SCRAP	17600.00	38750.00	38240.00

SCALE VIEW

1544



ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 011A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

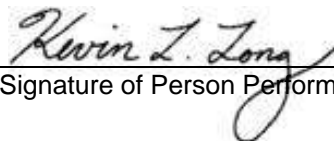
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn (Print Name) falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023
Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 1 - 011A (PB 881)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-881-01	PB-881-01-SS01	3	3.5	Pyrene	SW8270D	Soil	0.15	0.52	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.52	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.7	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.52	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.7	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Chrysene	SW8270D	Soil	0.22	0.52	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Fluorene	SW8270D	Soil	0.19	0.88	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.26	0.88	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00087	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.16	0.52	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Lead	SW6010D	Soil	1.62	2	7/12/2022	7/18/2022
PB-881-01	PB-881-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.055	0.0017	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.52	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.13	7/12/2022	7/18/2022
PB-881-01	PB-881-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00043	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00087	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.091	0.0017	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00043	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Cumene	SW8260C	Soil	0.0032	0.00087	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00087	7/12/2022	7/19/2022
PB-881-01	PB-881-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/12/2022	7/19/2022
PB-881-02	PB-881-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-02	PB-881-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/12/2022	7/15/2022
PB-881-02	PB-881-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-02	PB-881-02-SS01	3	3.5	Lead	SW6010D	Soil	1.49	2.04	7/12/2022	7/18/2022
PB-881-02	PB-881-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/12/2022	7/15/2022
PB-881-02	PB-881-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00053	7/12/2022	7/15/2022
PB-881-02	PB-881-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-02	PB-881-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/12/2022	7/15/2022
PB-881-02	PB-881-02-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00053	7/12/2022	7/15/2022
PB-881-02	PB-881-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-02	PB-881-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-02	PB-881-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00093	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	1.2	0.17	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Fluorene	SW8270D	Soil	0.51	0.17	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Chrysene	SW8270D	Soil	0.2	0.1	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.04	0.1	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Pyrene	SW8270D	Soil	0.15	0.1	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	1	0.1	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Lead	SW6010D	Soil	1.78	4.15	7/12/2022	7/18/2022
PB-881-03	PB-881-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00093	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00093	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00046	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00093	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/12/2022	7/15/2022
PB-881-03	PB-881-03-SS01	3	3.5	Anthracene	SW8270D	Soil	0.097	0.1	7/12/2022	7/14/2022
PB-881-03	PB-881-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	Benzo(a)anthracene	SW8270D	Soil	0.23	0.11	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	Benzo(a)pyrene	SW8270D	Soil	0.25	0.15	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	Benzo(b)fluoranthene	SW8270D	Soil	0.29	0.11	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	Benzo(g,h,i)perylene	SW8270D	Soil	0.14	0.15	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	Chrysene	SW8270D	Soil	0.22	0.11	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	Fluorene	SW8270D	Soil	0.018	0.19	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	Naphthalene	SW8270D	Soil	0.048	0.19	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	Pyrene	SW8270D	Soil	0.28	0.11	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	Toluene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	Phenanthrene	SW8270D	Soil	0.21	0.11	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	Anthracene	SW8270D	Soil	0.047	0.11	7/12/2022	7/14/2022
PB-881-04	PB-881-04-SS01	2.5	3	Xylenes (total)	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	Benzene	SW8260C	Soil	ND	0.00051	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	Cumene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-04	PB-881-04-SS01	2.5	3	Lead	SW6010D	Soil	89.2	22.8	7/12/2022	7/18/2022
PB-881-05	PB-881-05-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/12/2022	7/14/2022
PB-881-05	PB-881-05-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-05	PB-881-05-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-05	PB-881-05-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00098	7/12/2022	7/15/2022
PB-881-05	PB-881-05-SS01	3	3.5	Lead	SW6010D	Soil	7.7	2.2	7/12/2022	7/18/2022
PB-881-05	PB-881-05-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00049	7/12/2022	7/15/2022
PB-881-05	PB-881-05-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND			

Table 1 - 011A (PB 881)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-881-05	PB-881-05-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00098	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00056	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-06	PB-881-06-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00056	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/12/2022	7/15/2022
PB-881-06	PB-881-06-SS01	3	3.5	Lead	SW6010D	Soil	1.45	2.02	7/12/2022	7/18/2022
PB-881-07	DUP-41	3	3.5	Toluene	SW8260C	Soil	ND	0.065	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.031	0.11	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	Pyrene	SW8270D	Soil	0.1	0.11	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	Phenanthrene	SW8270D	Soil	0.88	0.11	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	Naphthalene	SW8270D	Soil	0.6	0.18	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	Fluorene	SW8270D	Soil	0.41	0.18	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	Chrysene	SW8270D	Soil	0.15	0.11	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.032	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	Anthracene	SW8270D	Soil	0.063	0.11	7/12/2022	7/14/2022
PB-881-07	DUP-41	3	3.5	Xylenes (total)	SW8260C	Soil	0.0695	0.13	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	1	0.13	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.065	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.45	0.13	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	Benzene	SW8260C	Soil	ND	0.032	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	Cumene	SW8260C	Soil	0.012	0.065	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.065	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.13	7/12/2022	7/15/2022
PB-881-07	DUP-41	3	3.5	Lead	SW6010D	Soil	1.48	2.05	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.042	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	Pyrene	SW8270D	Soil	0.064	0.1	7/12/2022	7/14/2022
PB-881-07	PB-881-07-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.048	0.17	7/12/2022	7/14/2022
PB-881-07	PB-881-07-SS01	3	3.5	Fluorene	SW8270D	Soil	0.23	0.17	7/12/2022	7/14/2022
PB-881-07	PB-881-07-SS01	3	3.5	Chrysene	SW8270D	Soil	0.087	0.1	7/12/2022	7/14/2022
PB-881-07	PB-881-07-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-07	PB-881-07-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-07	PB-881-07-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-07	PB-881-07-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.022	0.1	7/12/2022	7/14/2022
PB-881-07	PB-881-07-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.48	0.1	7/12/2022	7/14/2022
PB-881-07	PB-881-07-SS01	3	3.5	Lead	SW6010D	Soil	1.48	1.98	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.084	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.042	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	Cumene	SW8260C	Soil	0.0089	0.042	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.021	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.22	0.084	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.042	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.021	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.47	0.084	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.059	0.084	7/12/2022	7/18/2022
PB-881-07	PB-881-07-SS01	3	3.5	Anthracene	SW8270D	Soil	0.04	0.1	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00058	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0023	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00058	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	7/12/2022	7/15/2022
PB-881-08	PB-881-08-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-08	PB-881-08-SS01	4.5	5	Lead	SW6010D	Soil	6.67	2.43	7/12/2022	7/18/2022
PB-881-09	PB-881-09-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-881-09	PB-881-09-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/12/2022	7/15/2022
PB-881-09	PB-881-09-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-09	PB-881-09-SS01	3	3.5	Lead	SW6010D	Soil	6.12	2.29	7/12/2022	7/18/2022
PB-881-09	PB-881-09-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	7/12/2022	7/15/2022
PB-881-09	PB-881-09-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00058	7/12/2022	7/15/2022
PB-881-09	PB-881-09-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-881-09	PB-881-09-SS01	3	3.5	1,3,5-Trim						

Table 1 - 011A (PB 881)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-881-09	PB-881-09-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/12/2022	7/15/2022
PB-881-09	PB-881-09-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.1	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	Naphthalene	SW8270D	Soil	4.4	0.86	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Fluorene	SW8270D	Soil	1.1	0.86	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Chrysene	SW8270D	Soil	0.34	0.51	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.69	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.51	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.69	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.17	0.51	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Pyrene	SW8270D	Soil	0.23	0.51	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Phenanthrene	SW8270D	Soil	1.9	0.51	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Lead	SW6010D	Soil	1.22	2.04	7/12/2022	7/18/2022
PB-881-10	PB-881-10-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.21	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.067	0.1	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	Cumene	SW8260C	Soil	0.26	0.1	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.052	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	3.6	0.21	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.1	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.052	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	9.4	0.21	7/12/2022	7/15/2022
PB-881-10	PB-881-10-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.51	7/12/2022	7/19/2022
PB-881-10	PB-881-10-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.456	0.21	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-11	PB-881-11-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-11	PB-881-11-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-11	PB-881-11-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-11	PB-881-11-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-11	PB-881-11-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-11	PB-881-11-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-11	PB-881-11-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-11	PB-881-11-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-11	PB-881-11-SS01	3	3.5	Lead	SW6010D	Soil	2.35	4.14	7/12/2022	7/18/2022
PB-881-11	PB-881-11-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00053	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00053	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/12/2022	7/15/2022
PB-881-11	PB-881-11-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-12	PB-881-12-SS01	3	3.5	Lead	SW6010D	Soil	1.4	2.06	7/12/2022	7/18/2022
PB-881-12	PB-881-12-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00051	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-12	PB-881-12-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00099	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00049	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-13	PB-881-13-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00099	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00049	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00099	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00099	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-13	PB-881-13-SS01	3	3.5	Lead	SW6010D	Soil	2.2	4.2	7/12/2022	7/18/2022
PB-881-14	PB-881-14-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0009	7/12/2022	7/15/2022
PB-881-14	PB-881-14-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	7/12/2022	7/15/2022
PB-881-14	PB-881-14-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-14	PB-881-14-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/12/2022	7/15/2022
PB-881-14	PB-881-14-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/12/2022	7/15/2022
PB-881-14	PB-881-14-SS01	3	3.5	1						

Table 1 - 011A (PB 881)

Sample/Analysis Information (Attachment for Section III.)

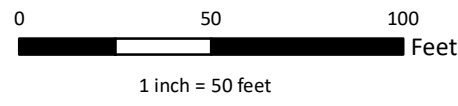
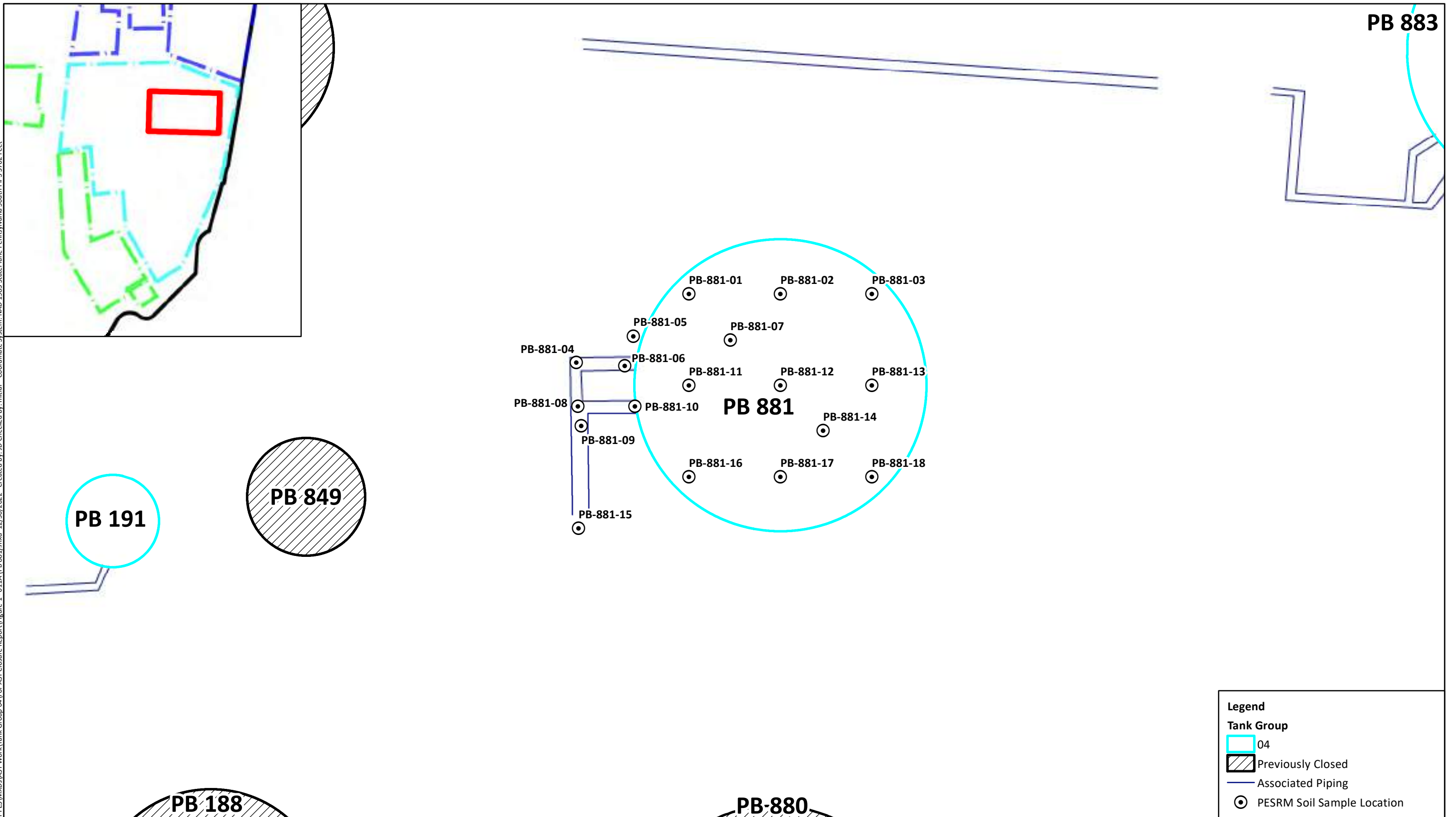
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-881-14	PB-881-14-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0009	7/12/2022	7/15/2022
PB-881-14	PB-881-14-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/12/2022	7/15/2022
PB-881-14	PB-881-14-SS01	3	3.5	Lead	SW6010D	Soil	2.02	3.98	7/12/2022	7/18/2022
PB-881-15	PB-881-15-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.00096	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-15	PB-881-15-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	7/12/2022	7/14/2022
PB-881-15	PB-881-15-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/12/2022	7/14/2022
PB-881-15	PB-881-15-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-15	PB-881-15-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/12/2022	7/14/2022
PB-881-15	PB-881-15-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-15	PB-881-15-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/12/2022	7/14/2022
PB-881-15	PB-881-15-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-15	PB-881-15-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-15	PB-881-15-SS01	4.5	5	Lead	SW6010D	Soil	5.85	2.36	7/12/2022	7/18/2022
PB-881-15	PB-881-15-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	0.00054	0.0019	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.00096	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.00096	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00048	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00096	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/12/2022	7/15/2022
PB-881-15	PB-881-15-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/12/2022	7/14/2022
PB-881-16	PB-881-16-SS01	3	3.5	Lead	SW6010D	Soil	10.7	4.8	7/12/2022	7/18/2022
PB-881-16	PB-881-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00051	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	Cumene	SW8260C	Soil	0.00017	0.001	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-16	PB-881-16-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-17	PB-881-17-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	7/12/2022	7/15/2022
PB-881-17	PB-881-17-SS01	3	3.5	Lead	SW6010D	Soil	1.4	2.05	7/12/2022	7/18/2022
PB-881-17	PB-881-17-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-17	PB-881-17-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-17	PB-881-17-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-17	PB-881-17-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-17	PB-881-17-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-17	PB-881-17-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	7/12/2022	7/15/2022
PB-881-17	PB-881-17-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-17	PB-881-17-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/12/2022	7/15/2022
PB-881-17	PB-881-17-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-18	PB-881-18-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-18	PB-881-18-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/12/2022	7/14/2022
PB-881-18	PB-881-18-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-18	PB-881-18-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022
PB-881-18	PB-881-18-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-18	PB-881-18-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-18	PB-881-18-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-18	PB-881-18-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/12/2022	7/14/2022
PB-881-18	PB-881-18-SS01	3	3.5	Lead	SW6010D	Soil	1.46	2.05	7/12/2022	7/18/2022
PB-881-18	PB-881-18-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00098	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00098	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00049	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00098	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00049	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00098	7/12/2022	7/15/2022
PB-881-18	PB-881-18-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/12/2022	7/14/2022

Notes:

SS -- Soil Sample.

DUP-41 is a field duplicate associated with sample PB-881-07-SS01.

File: N:\GIS\Prj\PO44_001_PESRM-PES\MXDS\AST\Work\Tank Group 04\For AST Closure Report\Figure 1_011A (PB 881).mxd 12/30/2022 Created by: J.D. Checked by: Initial Coordinate System: NAD_1983_StatePlane_Pennsylvania_South_FPS_3702_Feet



SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Site Location and Sampling Map 011A (PB 881) Figure 1
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	



Photograph 1:
View of Tank 011A (PB 881) during demolition.



Photograph 2:
View of Tank 011A (PB 881) during demolition.



Photograph 3:
View of scrap piles during demolition.



Photograph 4:
View of scrap piles and the concrete pad during demolition.



Photograph 5:

View of the concrete pad following demolition.

Product Movement and Waste Disposal Documentation (Tank 011A)

15020

ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 056A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

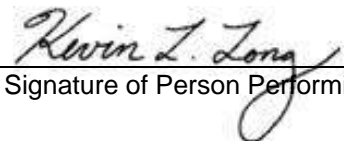
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 8 - 056A (PB 882)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-882-01	PB-882-01-SS01	3	3.5	Benzo(a)anthracene	SW8270DSIM	Soil	0.0014	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	0.00078	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	ND	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	Chrysene	SW8270DSIM	Soil	0.00066	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	Fluorene	SW8270DSIM	Soil	ND	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	Naphthalene	SW8270DSIM	Soil	ND	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/29/2021	8/4/2021
PB-882-01	PB-882-01-SS01	3	3.5	Pyrene	SW8270DSIM	Soil	0.0014	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	Anthracene	SW8270DSIM	Soil	ND	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	Phenanthrene	SW8270DSIM	Soil	0.00093	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/29/2021	8/4/2021
PB-882-01	PB-882-01-SS01	3	3.5	Benzo(a)pyrene	SW8270DSIM	Soil	ND	0.0078	7/29/2021	8/3/2021
PB-882-01	PB-882-01-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/29/2021	8/4/2021
PB-882-01	PB-882-01-SS01	3	3.5	Lead	SW6010C	Soil	4.2	2.4	7/29/2021	8/6/2021
PB-882-01	PB-882-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	7/29/2021	8/4/2021
PB-882-01	PB-882-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/29/2021	8/4/2021
PB-882-01	PB-882-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/29/2021	8/4/2021
PB-882-01	PB-882-01-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00052	7/29/2021	8/4/2021
PB-882-01	PB-882-01-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/29/2021	8/4/2021
PB-882-01	PB-882-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/29/2021	8/4/2021
PB-882-01	PB-882-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	Lead	SW6010C	Soil	5.3	2.3	7/29/2021	8/6/2021
PB-882-02	PB-882-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00095	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	Anthracene	SW8270DSIM	Soil	ND	0.0072	7/29/2021	8/3/2021
PB-882-02	PB-882-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00095	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	Benzo(a)anthracene	SW8270DSIM	Soil	0.00094	0.0072	7/29/2021	8/3/2021
PB-882-02	PB-882-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00095	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00047	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00095	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	Benzo(a)pyrene	SW8270DSIM	Soil	ND	0.0072	7/29/2021	8/3/2021
PB-882-02	PB-882-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00047	7/29/2021	8/4/2021
PB-882-02	PB-882-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	ND	0.0072	7/29/2021	8/3/2021
PB-882-02	PB-882-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	ND	0.0072	7/29/2021	8/3/2021
PB-882-02	PB-882-02-SS01	3	3.5	Chrysene	SW8270DSIM	Soil	ND	0.0072	7/29/2021	8/3/2021
PB-882-02	PB-882-02-SS01	3	3.5	Fluorene	SW8270DSIM	Soil	ND	0.0072	7/29/2021	8/3/2021
PB-882-02	PB-882-02-SS01	3	3.5	Naphthalene	SW8270DSIM	Soil	ND	0.0072	7/29/2021	8/3/2021
PB-882-02	PB-882-02-SS01	3	3.5	Phenanthrene	SW8270DSIM	Soil	ND	0.0072	7/29/2021	8/3/2021
PB-882-02	PB-882-02-SS01	3	3.5	Pyrene	SW8270DSIM	Soil	ND	0.0072	7/29/2021	8/3/2021
PB-882-03	PB-882-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-03	PB-882-03-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-03	PB-882-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-882-03	PB-882-03-SS01	3	3.5	Lead	SW6010D	Soil	9.65	4.74	7/13/2022	7/19/2022
PB-882-03	PB-882-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0009	7/13/2022	7/18/2022
PB-882-03	PB-882-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	7/13/2022	7/18/2022
PB-882-03	PB-882-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0009	7/13/2022	7/18/2022
PB-882-03	PB-882-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-03	PB-882-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00045	7/13/2022	7/18/2022
PB-882-03	PB-882-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0009	7/13/2022	7/18/2022
PB-882-03	PB-882-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0009	7/13/2022	7/18/2022
PB-882-03	PB-882-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.00096	0.0019	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-04	PB-882-04-SS01	3	3.5	Lead	SW6010D	Soil	6.1	4.59	7/13/2022	7/19/2022
PB-882-04	PB-882-04-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00095	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.00014	0.00095	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00095	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	Benzene	SW8260C	Soil	0.00058	0.00048	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00038	0.0019	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.001075	0.0019	7/13/2022	7/18/2022
PB-882-04	PB-882-04-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00095	7/13/2022	7/18/2022
PB-882-05	PB-882-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/13/2022	7/18/2022
PB-882-05	PB-882-05-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-05	PB-882-05-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/13/2022	7/18/2022
PB-882-05	PB-882-05-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/13/2022	7/18/2022
PB-882-05	PB-882-05-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/13/2022	7/18/2022
PB-882-05	PB-882-05-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/13/2022	7/18/2022
PB-882-05	PB-882-05-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	7/	

Table 8 - 056A (PB 882)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-882-06	PB-882-06-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-06	PB-882-06-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-06	PB-882-06-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-06	PB-882-06-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-06	PB-882-06-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-06	PB-882-06-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-06	PB-882-06-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-06	PB-882-06-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-06	PB-882-06-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-06	PB-882-06-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00091	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00091	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00045	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00091	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00091	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-06	PB-882-06-SS01	3	3.5	Lead	SW6010D	Soil	5.96	4.56	7/13/2022	7/19/2022
PB-882-07	PB-882-07-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-07	PB-882-07-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-07	PB-882-07-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00091	7/13/2022	7/18/2022
PB-882-07	PB-882-07-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00091	7/13/2022	7/18/2022
PB-882-07	PB-882-07-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-07	PB-882-07-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00091	7/13/2022	7/18/2022
PB-882-07	PB-882-07-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00091	7/13/2022	7/18/2022
PB-882-07	PB-882-07-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00046	7/13/2022	7/18/2022
PB-882-07	PB-882-07-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-07	PB-882-07-SS01	3	3.5	Lead	SW6010D	Soil	5.62	4.66	7/13/2022	7/19/2022
PB-882-07	PB-882-07-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/13/2022	7/18/2022
PB-882-07	PB-882-07-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-08	PB-882-08-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	Fluorene	SW8270D	Soil	0.4	0.19	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	Naphthalene	SW8270D	Soil	1.6	0.19	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.00089	7/13/2022	7/20/2022
PB-882-08	PB-882-08-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.78	0.12	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.041	0.0018	7/13/2022	7/20/2022
PB-882-08	PB-882-08-SS01	4.5	5	Anthracene	SW8270D	Soil	0.041	0.12	7/13/2022	7/15/2022
PB-882-08	PB-882-08-SS01	4.5	5	Lead	SW6010D	Soil	3.78	4.65	7/13/2022	7/19/2022
PB-882-08	PB-882-08-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	0.004945	0.0018	7/13/2022	7/20/2022
PB-882-08	PB-882-08-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	7/13/2022	7/20/2022
PB-882-08	PB-882-08-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00089	7/13/2022	7/20/2022
PB-882-08	PB-882-08-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.016	0.0018	7/13/2022	7/20/2022
PB-882-08	PB-882-08-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00045	7/13/2022	7/20/2022
PB-882-08	PB-882-08-SS01	4.5	5	Cumene	SW8260C	Soil	0.039	0.00089	7/13/2022	7/20/2022
PB-882-08	PB-882-08-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.017	0.00089	7/13/2022	7/20/2022
PB-882-08	PB-882-08-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	0.0025	0.0022	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	Naphthalene	SW8270D	Soil	0.06	0.2	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Fluorene	SW8270D	Soil	0.99	0.2	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Chrysene	SW8270D	Soil	0.094	0.12	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Pyrene	SW8270D	Soil	0.062	0.12	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Anthracene	SW8270D	Soil	0.076	0.12	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Phenanthrene	SW8270D	Soil	1.7	0.12	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Lead	SW6010D	Soil	4.45	4.8	7/13/2022	7/19/2022
PB-882-09	PB-882-09-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	Cumene	SW8260C	Soil	0.042	0.0011	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.00054	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/13/2022	7/20/2022
PB-882-09	PB-882-09-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	0.024	0.12	7/13/2022	7/15/2022
PB-882-09	PB-882-09-SS01	4	4.5	Toluene	SW8260C	Soil	0.00079	0.0011	7/13/2022	7/20/2022
PB-882-10	PB-882-10-SS01	4	4.5	Benzo(a)anthracene	SW8270DSIM	Soil	0.022	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	Benzo(a)pyrene	SW8270DSIM	Soil	0.014	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	0.028	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	0.018	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	Chrysene	SW8270DSIM	Soil	0.27	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	Fluorene	SW8270DSIM	Soil	0.57	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	Naphthalene	SW8270DSIM	Soil	0.16	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	Pyrene	SW8270DSIM	Soil	0.083	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.19	7/30/2021	8/5/2021
PB-882-10	PB-882-10-SS01	4	4.5	Phenanthrene	SW8270DSIM	Soil	1.4	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.095	7/30/2021	8/5/2021
PB-882-10	PB-882-10-SS01	4	4.5	Anthracene	SW8270DSIM	Soil	0.068	0.036	7/30/2021	8/8/2021
PB-882-10	PB-882-10-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.38	7/30/2021	8/5/2021
PB-882-10	PB-882-10-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.38	7/30/2021	8/5/2021
PB-882-10	PB-882-10-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.19	7/30/2021	8/5/2021
PB-882-10	PB-882-10-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.38	7/30/2021	8/5/2021
PB-882-10	PB-882-10-SS01	4</								

Table 8 - 056A (PB 882)

Sample/Analysis Information (Attachment for Section III.)

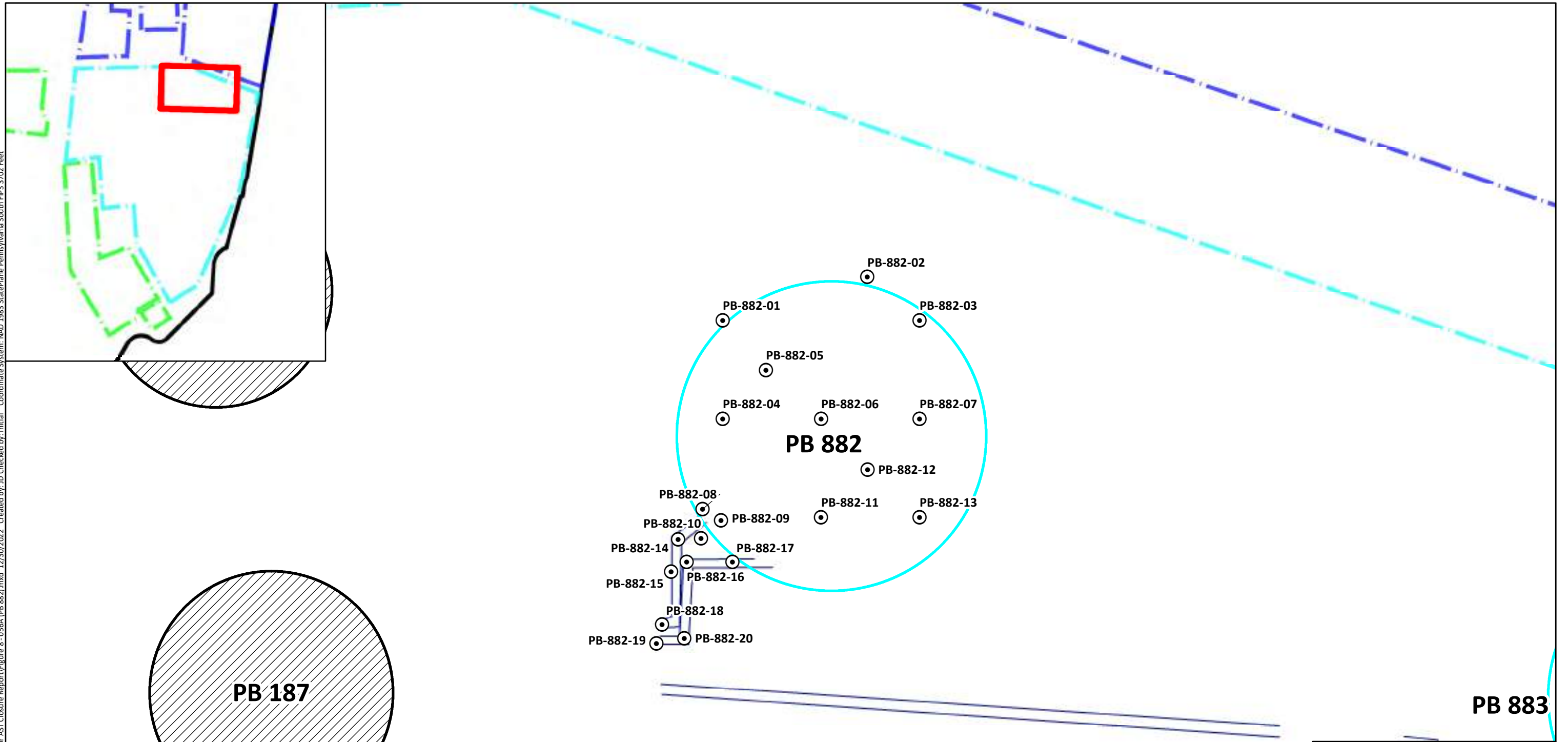
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-882-11	PB-882-11-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-11	PB-882-11-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-11	PB-882-11-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-11	PB-882-11-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-11	PB-882-11-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-11	PB-882-11-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-11	PB-882-11-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-11	PB-882-11-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-11	PB-882-11-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-11	PB-882-11-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00087	7/13/2022	7/18/2022
PB-882-11	PB-882-11-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00087	7/13/2022	7/18/2022
PB-882-11	PB-882-11-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.0016	0.0017	7/13/2022	7/18/2022
PB-882-11	PB-882-11-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00087	7/13/2022	7/18/2022
PB-882-11	PB-882-11-SS01	3	3.5	Cumene	SW8260C	Soil	0.0001	0.00087	7/13/2022	7/18/2022
PB-882-11	PB-882-11-SS01	3	3.5	Benzene	SW8260C	Soil	0.00032	0.00043	7/13/2022	7/18/2022
PB-882-11	PB-882-11-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/13/2022	7/18/2022
PB-882-11	PB-882-11-SS01	3	3.5	Lead	SW6010D	Soil	5.69	4.61	7/13/2022	7/19/2022
PB-882-11	PB-882-11-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00043	7/13/2022	7/18/2022
PB-882-11	PB-882-11-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00085	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/13/2022	7/15/2022
PB-882-12	PB-882-12-SS01	3	3.5	Lead	SW6010D	Soil	7.37	4.65	7/13/2022	7/19/2022
PB-882-12	PB-882-12-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00043	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00085	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	Benzene	SW8260C	Soil	0.00037	0.00043	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00085	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00085	7/13/2022	7/18/2022
PB-882-12	PB-882-12-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00092	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/13/2022	7/15/2022
PB-882-13	PB-882-13-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	Lead	SW6010D	Soil	5.83	4.54	7/13/2022	7/19/2022
PB-882-13	PB-882-13-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00092	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00046	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00092	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00092	7/13/2022	7/18/2022
PB-882-13	PB-882-13-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/13/2022	7/18/2022
PB-882-14	PB-882-14-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	Naphthalene	SW8270DSIM	Soil	0.13	0.016	7/30/2021	8/10/2021
PB-882-14	PB-882-14-SS01	3	3.5	Fluorene	SW8270DSIM	Soil	0.29	0.016	7/30/2021	8/10/2021
PB-882-14	PB-882-14-SS01	3	3.5	Chrysene	SW8270DSIM	Soil	0.16	0.016	7/30/2021	8/10/2021
PB-882-14	PB-882-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	0.0097	0.016	7/30/2021	8/10/2021
PB-882-14	PB-882-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	0.02	0.016	7/30/2021	8/10/2021
PB-882-14	PB-882-14-SS01	3	3.5	Benzo(a)pyrene	SW8270DSIM	Soil	0.018	0.016	7/30/2021	8/10/2021
PB-882-14	PB-882-14-SS01	3	3.5	Benzo(a)anthracene	SW8270DSIM	Soil	0.035	0.016	7/30/2021	8/10/2021
PB-882-14	PB-882-14-SS01	3	3.5	Pyrene	SW8270DSIM	Soil	0.05	0.016	7/30/2021	8/10/2021
PB-882-14	PB-882-14-SS01	3	3.5	Phenanthrene	SW8270DSIM	Soil	0.84	0.016	7/30/2021	8/10/2021
PB-882-14	PB-882-14-SS01	3	3.5	Lead	SW6010C	Soil	7	2.5	7/30/2021	8/6/2021
PB-882-14	PB-882-14-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	Cumene	SW8260C	Soil	0.0031	0.001	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.005	0.002	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0077	0.002	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/30/2021	8/5/2021
PB-882-14	PB-882-14-SS01	3	3.5	Anthracene	SW8270DSIM	Soil	ND	0.016	7/30/2021	8/10/2021
PB-882-15	PB-882-15-SS01	3	3.5	Anthracene	SW8270DSIM	Soil	0.024	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	Pyrene	SW8270DSIM	Soil	0.047	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	Benzo(a)pyrene	SW8270DSIM	Soil	0.019	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	0.024	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	0.0076	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	Chrysene	SW8270DSIM	Soil	0.023	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	Fluorene	SW8270DSIM	Soil	0.015	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	Naphthalene	SW8270DSIM	Soil	0.0094	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/30/2021	8/5/2021
PB-882-15	PB-882-15-SS01	3	3.5	Phenanthrene	SW8270DSIM	Soil	0.079	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	Lead	SW6010C	Soil	19.4	2.5	7/30/2021	8/6/2021
PB-882-15	PB-882-15-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/30/2021	8/5/2021
PB-882-15	PB-882-15-SS01	3	3.5	Benzo(a)anthracene	SW8270DSIM	Soil	0.03	0.008	7/30/2021	8/7/2021
PB-882-15	PB-882-15-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/30/2021	8/5/2021
PB-882-15	PB-882-15-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	7/30/2021	8/5/2021
PB-882-15	PB-882-15-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/30/2021	8/5/2021
PB-882-15	PB-882-15-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/30/2021	8/5/2021
PB-882-15	PB-882-15-SS01	3	3.5	B						

Table 8 - 056A (PB 882)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-882-16	PB-882-16-SS01	4	4.5	Fluorene	SW8270DSIM	Soil	0.78	0.077	7/30/2021	8/10/2021
PB-882-16	PB-882-16-SS01	4	4.5	Chrysene	SW8270DSIM	Soil	0.44	0.077	7/30/2021	8/10/2021
PB-882-16	PB-882-16-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	0.035	0.077	7/30/2021	8/10/2021
PB-882-16	PB-882-16-SS01	4	4.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	0.047	0.077	7/30/2021	8/10/2021
PB-882-16	PB-882-16-SS01	4	4.5	Benzo(a)pyrene	SW8270DSIM	Soil	0.036	0.077	7/30/2021	8/10/2021
PB-882-16	PB-882-16-SS01	4	4.5	Benzo(a)anthracene	SW8270DSIM	Soil	0.07	0.077	7/30/2021	8/10/2021
PB-882-16	PB-882-16-SS01	4	4.5	Pyrene	SW8270DSIM	Soil	0.16	0.077	7/30/2021	8/10/2021
PB-882-16	PB-882-16-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	64	1	7/30/2021	8/5/2021
PB-882-16	PB-882-16-SS01	4	4.5	Anthracene	SW8270DSIM	Soil	ND	0.077	7/30/2021	8/10/2021
PB-882-16	PB-882-16-SS01	4	4.5	Lead	SW6010C	Soil	11.3	2.3	7/30/2021	8/6/2021
PB-882-16	PB-882-16-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	39.2	0.2	7/30/2021	8/5/2021
PB-882-16	PB-882-16-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.05	7/30/2021	8/5/2021
PB-882-16	PB-882-16-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.1	7/30/2021	8/5/2021
PB-882-16	PB-882-16-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	18	0.2	7/30/2021	8/5/2021
PB-882-16	PB-882-16-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.05	7/30/2021	8/5/2021
PB-882-16	PB-882-16-SS01	4	4.5	Cumene	SW8260C	Soil	6.4	0.1	7/30/2021	8/5/2021
PB-882-16	PB-882-16-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	17	0.1	7/30/2021	8/5/2021
PB-882-16	PB-882-16-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.2	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	Naphthalene	SW8270DSIM	Soil	0.0096	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Fluorene	SW8270DSIM	Soil	0.088	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Chrysene	SW8270DSIM	Soil	0.028	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	0.002	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	0.0048	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Benzo(a)pyrene	SW8270DSIM	Soil	0.002	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Benzo(a)anthracene	SW8270DSIM	Soil	0.0069	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Pyrene	SW8270DSIM	Soil	0.0089	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Phenanthrene	SW8270DSIM	Soil	0.11	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Lead	SW6010C	Soil	3.9	2.3	7/30/2021	8/6/2021
PB-882-17	PB-882-17-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00054	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-17	PB-882-17-SS01	3	3.5	Anthracene	SW8270DSIM	Soil	ND	0.014	7/30/2021	8/7/2021
PB-882-17	PB-882-17-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Benzo(a)anthracene	SW8270DSIM	Soil	ND	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Benzo(a)pyrene	SW8270DSIM	Soil	ND	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	ND	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	ND	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Chrysene	SW8270DSIM	Soil	ND	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Fluorene	SW8270DSIM	Soil	ND	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Naphthalene	SW8270DSIM	Soil	ND	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Pyrene	SW8270DSIM	Soil	0.002	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Phenanthrene	SW8270DSIM	Soil	0.0041	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Anthracene	SW8270DSIM	Soil	0.00075	0.0079	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00054	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-18	PB-882-18-SS01	3	3.5	Lead	SW6010C	Soil	11.3	2.4	7/30/2021	8/6/2021
PB-882-19	PB-882-19-SS01	3	3.5	Lead	SW6010C	Soil	10	2.6	7/30/2021	8/6/2021
PB-882-19	PB-882-19-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	ND	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Benzo(a)anthracene	SW8270DSIM	Soil	ND	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Benzo(a)pyrene	SW8270DSIM	Soil	ND	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	ND	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Chrysene	SW8270DSIM	Soil	ND	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Fluorene	SW8270DSIM	Soil	ND	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Naphthalene	SW8270DSIM	Soil	ND	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Phenanthrene	SW8270DSIM	Soil	0.0014	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Anthracene	SW8270DSIM	Soil	ND	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Pyrene	SW8270DSIM	Soil	ND	0.0082	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00055	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/30/2021	8/5/2021
PB-882-19	PB-882-19-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/30/2021	8/5/2021
PB-882-20	PB-882-20-SS01	3	3.5	Benzo(a)anthracene	SW8270DSIM	Soil	0.076	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	Benzo(a)pyrene	SW8270DSIM	Soil	0.04	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	Benzo(b)fluoranthene	SW8270DSIM	Soil	0.074	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270DSIM	Soil	0.038	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	Chrysene	SW8270DSIM	Soil	0.42	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	Fluorene	SW8270DSIM	Soil	0.46	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	Naphthalene	SW8270DSIM	Soil	0.062	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	Pyrene	SW8270DSIM	Soil	0.14	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/30/2021	8/5/2021
PB-882-20	PB-882-20-SS01	3	3.5	Phenanthrene	SW8270DSIM	Soil	1.2	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/30/2021	8/5/2021
PB-882-20	PB-882-20-SS01	3	3.5	Anthracene	SW8270DSIM	Soil	ND	0.016	7/30/2021	8/7/2021
PB-882-20	PB-882-20-SS01	3	3.5	Lead	SW6010C	Soil	73.6	2.5	7/30/2021	8/6/2021
PB-882-20	PB-882-20-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/30/2021	8/5/2021
PB-882-20	PB-882-20-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	7/30/2021	8/5/2021
PB-882-20	PB-882-20-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/30/2021	8/5/2021
PB-882-20	PB-882-20-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/30/2021	8/5/2021
PB-882-20	PB-882-20-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00051	7/30/2021	8/5/2021
PB-882-20	PB-882-									

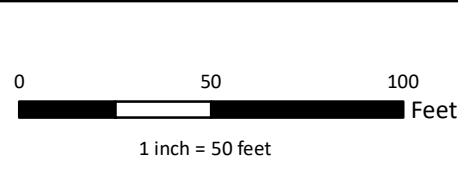
File: N:\GIS\Project\044_001_PESRM-PES\MapDocs\AST\Work\Tank Group 04\For AST Closure Report\Figure 8_056A (PB 882).mxd 12/30/2022 Created by: J.D. Checked by: Initial Coordinate System: NAD_1983_StatePlane_Pennsylvania_South_FPS_3702_Feet



Legend

Tank Group

- 04
- Previously Closed
- Associated Piping
- PESRM Soil Sample Location



 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Site Location and Sampling Map 056A (PB 882) Figure 8
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	



Photograph 1:
View of Tank 056A (PB 882) prior to demolition.



Photograph 2:
View of Tank 056A (PB 882) during demolition.



Photograph 3:
View of Tank 056A (PB 882) during demolition.



Photograph 4:
View of scrap piles and the concrete pad during demolition.



Photograph 5:
View of scrap piles during demolition.



Photograph 6:
View of the concrete pad following demolition.

Product Movement and Waste Disposal Documentation (Tank 056A)



PES Project Load Ticket

AS120103

Load Ticket: 11801

Date: 05-18-21

Sold to: Allegany
Location: Town 882
Carrier: Allegany

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: Tank Plate

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade _____
- Other Alloy, Grade _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / Fill
- Sand Fill
- Crushed Stone
- Other: _____

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004 -D013)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: 260

Container #: 50

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

Scale Ticket #: _____

Gross Weight: 62820 lbs

Tare Weight: 41500 lbs

Net Weight: 22320 lbs

NorthStar Rep. Signature: [Signature]

Received By: [Signature]

HILCO REDEVELOPEMENT PARTNERS
3144 W. PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20027328
Date: 05/18/2021 7:10 AM
Phone: () -
Fax: () -

Customer: HILCO
HILCO

Order Number: 001
SCRAP REMOVAL
Tons: 15641.626
Loads: 1182

DT260-50 - TRUCK 260 W/ TRAILER 50
CARLAD - CARLA DAVILA

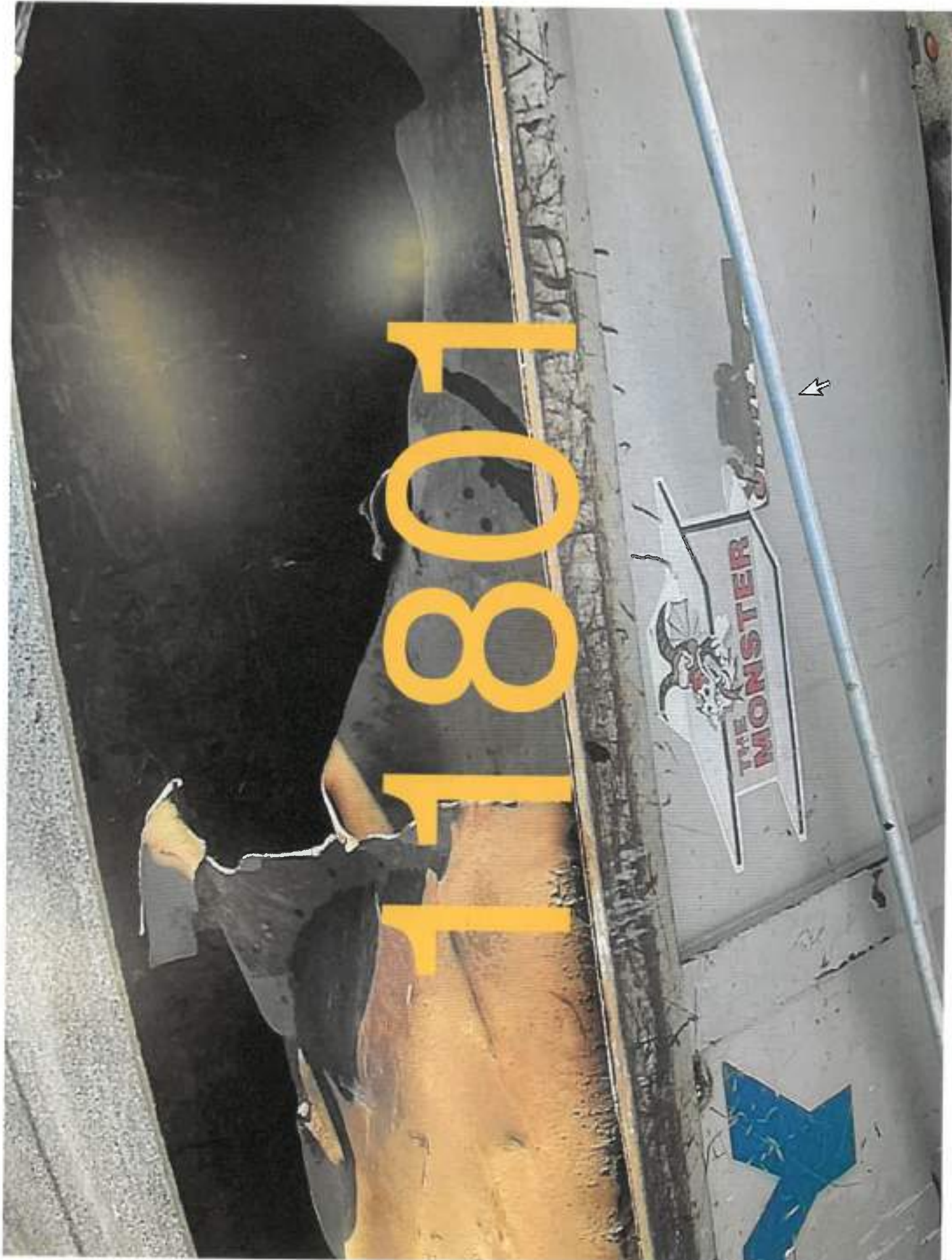
Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	11.16 tn						

Weight Information

Material	Gross	Tare	Net
SCRAP	62821.00	40500.00	22320.00



ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 057A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

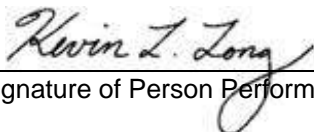
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn (Print Name) falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 9 - 057A (PB 883)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-883-01	PB-883-01-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/14/2022	7/18/2022
PB-883-01	PB-883-01-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/14/2022	7/18/2022
PB-883-01	PB-883-01-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-01	PB-883-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/14/2022	7/18/2022
PB-883-01	PB-883-01-SS01	3	3.5	Lead	SW6010D	Soil	7.61	11.4	7/14/2022	7/20/2022
PB-883-01	PB-883-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	7/14/2022	7/18/2022
PB-883-01	PB-883-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/14/2022	7/18/2022
PB-883-01	PB-883-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/14/2022	7/18/2022
PB-883-01	PB-883-01-SS01	3	3.5	Benzene	SW8260C	Soil	0.00026	0.00052	7/14/2022	7/18/2022
PB-883-01	PB-883-01-SS01	3	3.5	Cumene	SW8260C	Soil	0.00018	0.001	7/14/2022	7/18/2022
PB-883-01	PB-883-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/14/2022	7/18/2022
PB-883-01	PB-883-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.00032	0.0021	7/14/2022	7/18/2022
PB-883-02	PB-883-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-02	PB-883-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-02	PB-883-02-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-02	PB-883-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-02	PB-883-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-02	PB-883-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-02	PB-883-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-02	PB-883-02-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-02	PB-883-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-02	PB-883-02-SS01	3	3.5	Lead	SW6010D	Soil	6.88	2.35	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.0018	0.002	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00051	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-883-02	PB-883-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00082	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/14/2022	7/16/2022
PB-883-03	PB-883-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0016	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0016	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	Lead	SW6010D	Soil	5.82	4.41	7/14/2022	7/20/2022
PB-883-03	PB-883-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00041	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00082	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0016	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	Benzene	SW8260C	Soil	0.00041	0.00041	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00082	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00082	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.002	0.0016	7/14/2022	7/18/2022
PB-883-03	PB-883-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/16/2022
PB-883-04	PB-883-04-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.00098	7/14/2022	7/18/2022
PB-883-04	PB-883-04-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.19	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.19	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.12	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.12	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/14/2022	7/18/2022
PB-883-04	PB-883-04-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/21/2022
PB-883-04	PB-883-04-SS01	4	4.5	Lead	SW6010D	Soil	6.16	4.5	7/14/2022	7/20/2022
PB-883-04	PB-883-04-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/14/2022	7/18/2022
PB-883-04	PB-883-04-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00049	7/14/2022	7/18/2022
PB-883-04	PB-883-04-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00098	7/14/2022	7/18/2022
PB-883-04	PB-883-04-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/14/2022	7/18/2022
PB-883-04	PB-883-04-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.00049	7/14/2022	7/18/2022
PB-883-04	PB-883-04-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.00098	7/14/2022	7/18/2022
PB-883-04	PB-883-04-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.00098	7/14/2022	7/18/2022
PB-883-04	PB-883-04-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/14/2022	7/18/2022
PB-883-05	PB-883-05-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00091	7/14/2022	7/18/2022
PB-883-05	PB-883-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/14/2022	7/16/2022
PB-883-05	PB-883-05-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/14/2022	7/16/2022
PB-883-05	PB-883-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-05	PB-883-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/14/2022	7/16/2022
PB-883-05	PB-883-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-05	PB-883-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/14/2022	7/16/2022
PB-883-05	PB-883-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-05	PB-883-05-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-05	PB-883-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-05	PB-883-05-SS01	3	3.5	Lead	SW6010D	Soil	6.72	2.24	7/14/2022	7/19/2022
PB-883-05	PB-883-05-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.0042	0.0018	7/14/2022	7/18/2022
PB-883-05	PB-883-05-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00091	7/14/2022	7/18/2022
PB-883-05	PB-883-05-SS01	3	3.5	Cumene	SW8260C	Soil	0.0002	0.00091	7/14/2022	7/18/2022
PB-883-05	PB-883-05-SS01	3	3.5	Benzene	SW8260C	Soil	0.0003	0.00045	7/14/2022	7/18/2022
PB-883-05	PB-883-05-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00084	0.0018	7/14/2022	7/18/2022

Table 9 - 057A (PB 883)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-883-06	PB-883-06-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/14/2022	7/16/2022
PB-883-06	PB-883-06-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-06	PB-883-06-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/14/2022	7/16/2022
PB-883-06	PB-883-06-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-06	PB-883-06-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.19	7/14/2022	7/16/2022
PB-883-06	PB-883-06-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.19	7/14/2022	7/16/2022
PB-883-06	PB-883-06-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-06	PB-883-06-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-06	PB-883-06-SS01	4	4.5	Lead	SW6010D	Soil	6.14	2.28	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	0.00048	0.0021	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.00053	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00053	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/14/2022	7/19/2022
PB-883-06	PB-883-06-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	Lead	SW6010D	Soil	13.9	2.29	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-07	PB-883-07-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.00041	0.0023	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00056	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00025	0.0023	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	Benzene	SW8260C	Soil	0.00026	0.00056	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	Cumene	SW8260C	Soil	0.00021	0.0011	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/14/2022	7/19/2022
PB-883-07	PB-883-07-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.0016	0.0023	7/14/2022	7/19/2022
PB-883-08	PB-883-08-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-08	PB-883-08-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/8/2021	12/19/2021
PB-883-08	PB-883-08-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-08	PB-883-08-SS01	3	3.5	Lead	SW6010D	Soil	12.8	2.48	12/8/2021	12/22/2021
PB-883-08	PB-883-08-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	12/8/2021	12/19/2021
PB-883-08	PB-883-08-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	12/8/2021	12/19/2021
PB-883-08	PB-883-08-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-08	PB-883-08-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/8/2021	12/19/2021
PB-883-08	PB-883-08-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00054	12/8/2021	12/19/2021
PB-883-08	PB-883-08-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-08	PB-883-08-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-08	PB-883-08-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.17	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	Fluorene	SW8270D	Soil	ND	0.17	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-09	PB-883-09-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	ND	0.002	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	Lead	SW6010D	Soil	2.18	2.03	12/8/2021	12/22/2021
PB-883-09	PB-883-09-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.0005	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-09	PB-883-09-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	12/8/2021	12/19/2021
PB-883-10	PB-883-10-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00089	12/8/2021	12/19/2021
PB-883-10	PB-883-10-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	12/8/2021	12/20/2021
PB-883-10	PB-883-10-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	12/8/2021	12/20/2021
PB-883-10	PB-883-10-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	12/8/2021	12/20/2021
PB-883-10	PB-883-10-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	12/8/2021	12/20/2021
PB-883-10	PB-883-10-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	12/8/2021	12/20/2021
PB-883-10	PB-883-10-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	12/8/2021	12/20/2021
PB-883-10	PB-883-10-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	12/8/2021	12/20/2021
PB-883-10	PB-883-10-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	12/8/2021	12/20/2021
PB-883-10	PB-883-10-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	12/8/2021	12/20/2021
PB-883-10	PB-883-10-SS01	3	3.5	Lead	SW6010D	Soil	4.67	2.14	12/8/2021	12/22/2021
PB-883-10	PB-883-10-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	12/8/2021	12/19/2021
PB-883-10	PB-883-10-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00089	12/8/2021	12/19/2021
PB-883-10	PB-883-10-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00089	12/8/2021	12/19/2021
PB-883-10	PB-883-10-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00044	12/8/2021	12/19/2021
PB-883-10	PB-883-10-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	12/8/2021	12/19/2021
PB-883-10	PB-883-10-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00089		

Table 9 - 057A (PB 883)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-883-11	PB-883-11-SS01	3.5	4	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-11	PB-883-11-SS01	3.5	4	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-11	PB-883-11-SS01	3.5	4	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-11	PB-883-11-SS01	3.5	4	Chrysene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-11	PB-883-11-SS01	3.5	4	Fluorene	SW8270D	Soil	ND	0.19	12/8/2021	12/20/2021
PB-883-11	PB-883-11-SS01	3.5	4	Naphthalene	SW8270D	Soil	ND	0.19	12/8/2021	12/20/2021
PB-883-11	PB-883-11-SS01	3.5	4	Toluene	SW8260C	Soil	ND	0.00095	12/8/2021	12/19/2021
PB-883-11	PB-883-11-SS01	3.5	4	Phenanthrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-11	PB-883-11-SS01	3.5	4	Lead	SW6010D	Soil	4.25	2.32	12/8/2021	12/22/2021
PB-883-11	PB-883-11-SS01	3.5	4	Xylenes (total)	SW8260C	Soil	ND	0.0019	12/8/2021	12/19/2021
PB-883-11	PB-883-11-SS01	3.5	4	Anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-11	PB-883-11-SS01	3.5	4	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	12/8/2021	12/19/2021
PB-883-11	PB-883-11-SS01	3.5	4	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	12/8/2021	12/19/2021
PB-883-11	PB-883-11-SS01	3.5	4	1,2-Dichloroethane	SW8260C	Soil	ND	0.00095	12/8/2021	12/19/2021
PB-883-11	PB-883-11-SS01	3.5	4	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	12/8/2021	12/19/2021
PB-883-11	PB-883-11-SS01	3.5	4	Benzene	SW8260C	Soil	ND	0.00048	12/8/2021	12/19/2021
PB-883-11	PB-883-11-SS01	3.5	4	Cumene	SW8260C	Soil	ND	0.00095	12/8/2021	12/19/2021
PB-883-11	PB-883-11-SS01	3.5	4	Ethyl Benzene	SW8260C	Soil	ND	0.00095	12/8/2021	12/19/2021
PB-883-11	PB-883-11-SS01	3.5	4	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.028	0.12	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	Pyrene	SW8270D	Soil	0.021	0.12	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-12	PB-883-12-SS01	3	3.5	Lead	SW6010D	Soil	11	2.27	12/8/2021	12/22/2021
PB-883-12	PB-883-12-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00057	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00057	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-12	PB-883-12-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.00096	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Lead	SW6010D	Soil	6.72	2.44	12/8/2021	12/22/2021
PB-883-13	PB-883-13-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.00096	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.00096	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00048	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00096	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	12/8/2021	12/19/2021
PB-883-13	PB-883-13-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-13	PB-883-13-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.0019	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-14	PB-883-14-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-14	PB-883-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-14	PB-883-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-14	PB-883-14-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-14	PB-883-14-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.21	12/8/2021	12/20/2021
PB-883-14	PB-883-14-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.21	12/8/2021	12/20/2021
PB-883-14	PB-883-14-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-14	PB-883-14-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-14	PB-883-14-SS01	3	3.5	Lead	SW6010D	Soil	5.14	2.35	12/8/2021	12/22/2021
PB-883-14	PB-883-14-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0025	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00062	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0025	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00062	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0025	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0025	12/8/2021	12/19/2021
PB-883-14	PB-883-14-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-15	PB-883-15-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-15	PB-883-15-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/14/2022	7/19/2022
PB-883-15	PB-883-15-SS01	3	3.5	Lead	SW6010D	Soil	8.06	2.27	7/14/2022	7/19/2022
PB-883-15	PB-883-15-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	7/14/2022	7/19/2022
PB-883-15	PB-883-15-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00095	7/14/2022	7/19/2022
PB-883-15	PB-883-15-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/14/2022	7/19/2022
PB-883-15	PB-883-15-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00095	7/14/2022	7/19/2022
PB-883-15	PB-883-15-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00095	7/14/2022	7/19/2022
PB-883-15	PB-883-15-SS01	3	3.5	Methyl tert-butyl ether						

Table 9 - 057A (PB 883)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-883-16	PB-883-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.79	12/8/2021	12/22/2021
PB-883-16	PB-883-16-SS01	3	3.5	Chrysene	SW8270D	Soil	0.43	0.59	12/8/2021	12/22/2021
PB-883-16	PB-883-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.99	12/8/2021	12/22/2021
PB-883-16	PB-883-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.59	12/8/2021	12/22/2021
PB-883-16	PB-883-16-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.59	12/8/2021	12/22/2021
PB-883-16	PB-883-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.99	12/8/2021	12/22/2021
PB-883-16	PB-883-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00056	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.59	12/8/2021	12/22/2021
PB-883-16	PB-883-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00056	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	Cumene	SW8260C	Soil	0.00019	0.0011	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	12/8/2021	12/19/2021
PB-883-16	PB-883-16-SS01	3	3.5	Lead	SW6010D	Soil	8.62	2.28	12/8/2021	12/22/2021
PB-883-17	PB-883-17-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0013	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.13	0.54	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	Pyrene	SW8270D	Soil	0.2	0.54	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.43	0.54	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.9	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	Fluorene	SW8270D	Soil	0.29	0.9	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	Chrysene	SW8270D	Soil	0.36	0.54	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.72	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.54	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.72	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00064	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.54	12/8/2021	12/21/2021
PB-883-17	PB-883-17-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0026	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0026	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0026	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00064	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0013	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0026	12/8/2021	12/20/2021
PB-883-17	PB-883-17-SS01	3	3.5	Lead	SW6010D	Soil	7.06	4.2	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.064	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	Pyrene	SW8270D	Soil	0.19	0.54	12/8/2021	12/21/2021
PB-883-18	PB-883-18-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.91	12/8/2021	12/21/2021
PB-883-18	PB-883-18-SS01	3	3.5	Fluorene	SW8270D	Soil	0.25	0.91	12/8/2021	12/21/2021
PB-883-18	PB-883-18-SS01	3	3.5	Chrysene	SW8270D	Soil	0.37	0.54	12/8/2021	12/21/2021
PB-883-18	PB-883-18-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.72	12/8/2021	12/21/2021
PB-883-18	PB-883-18-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.54	12/8/2021	12/21/2021
PB-883-18	PB-883-18-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.72	12/8/2021	12/21/2021
PB-883-18	PB-883-18-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.54	12/8/2021	12/21/2021
PB-883-18	PB-883-18-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.52	0.54	12/8/2021	12/21/2021
PB-883-18	PB-883-18-SS01	3	3.5	Lead	SW6010D	Soil	6.49	4.24	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.13	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.064	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	Cumene	SW8260C	Soil	0.82	0.064	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.032	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.13	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.064	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.032	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.04	0.13	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.109	0.13	12/8/2021	12/22/2021
PB-883-18	PB-883-18-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.54	12/8/2021	12/21/2021
PB-883-19	PB-883-19-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Chrysene	SW8270D	Soil	0.027	0.1	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.18	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.18	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.001	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.002	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.0005	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.001	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.1	12/8/2021	12/20/2021
PB-883-19	PB-883-19-SS01	4.5	5	Lead	SW6010D	Soil	7.75	4.24	12/8/2021	12/22/2021
PB-883-20	PB-883-20-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00097	7/14/2022	7/19/2022
PB-883-20	PB-883-20-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.00089	0.0019	7/14/2022	7/19/2022
PB-883-20	PB-883-20-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/16/2022
PB-883-20	PB-883-20-SS01	3	3.5	Lead	SW6010D	Soil	7.73	2.28	7/14/2022	7/19/2022
PB-883-20	PB-883-20-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/14/2022	7/19/2022
PB-883-20	PB-883-20-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	7/14/2022	7/19/2022
PB-883-20	PB-883-20-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00097	7/14/2022	7/19/2022
PB-883-20	PB-883-20-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00048	0.0019	7/14/2022	7/19/2022
PB-883-20	PB-883-20-SS01	3	3.5	Benzene	SW8260C	Soil	0.00045	0.00048	7/14/2022	7/19/2022
PB-883-20	PB-883-20-SS01	3								

Table 9 - 057A (PB 883)

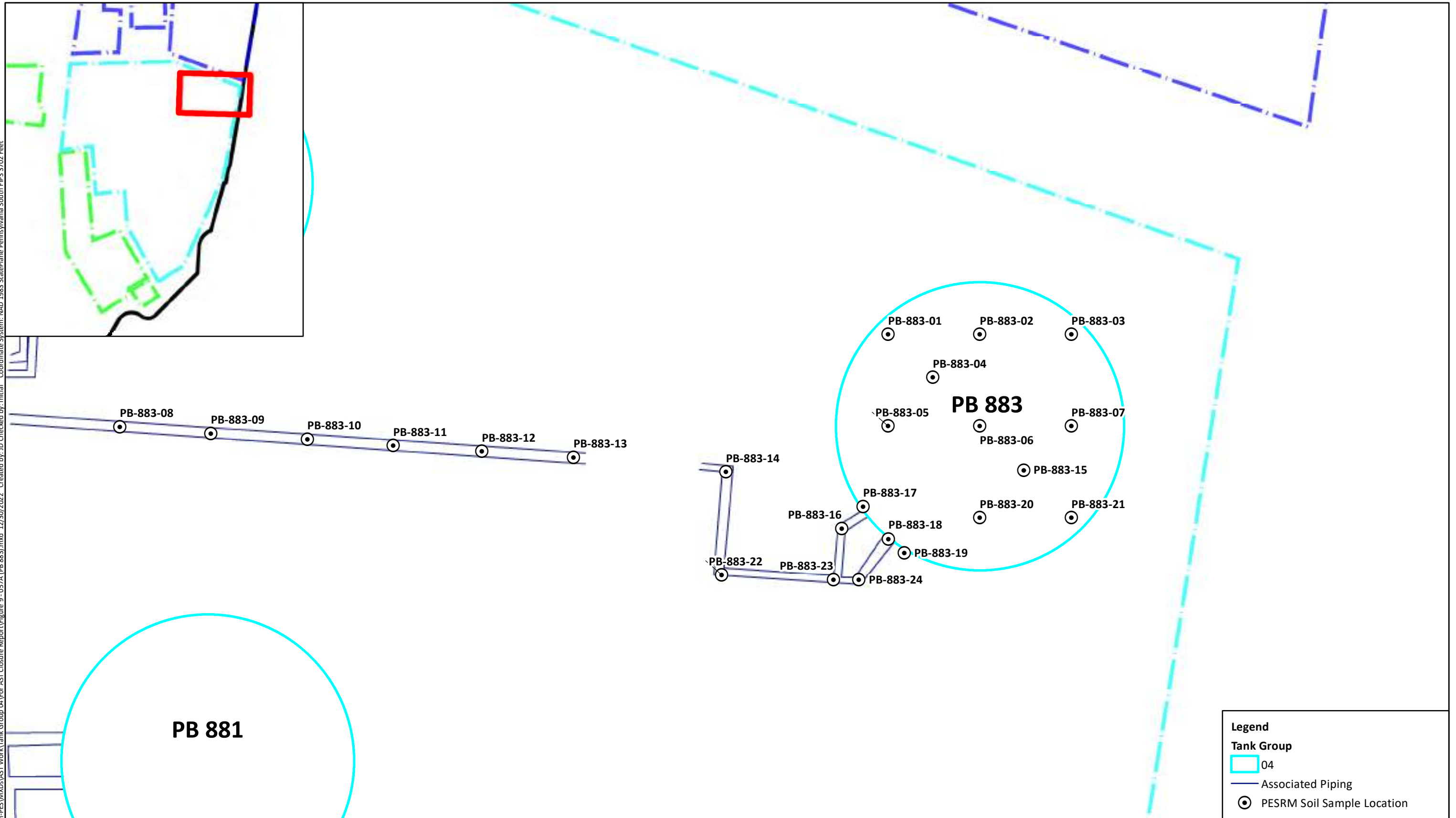
Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-883-21	PB-883-21-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/14/2022	7/16/2022
PB-883-21	PB-883-21-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/14/2022	7/16/2022
PB-883-21	PB-883-21-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/14/2022	7/16/2022
PB-883-21	PB-883-21-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/16/2022
PB-883-21	PB-883-21-SS01	3	3.5	Pyrene	SW8270D	Soil	0.23	0.11	7/14/2022	7/16/2022
PB-883-21	PB-883-21-SS01	3	3.5	Phenanthrene	SW8270D	Soil	3.7	0.11	7/14/2022	7/16/2022
PB-883-21	PB-883-21-SS01	3	3.5	Lead	SW6010D	Soil	12.6	10.6	7/14/2022	7/20/2022
PB-883-21	PB-883-21-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/14/2022	7/19/2022
PB-883-21	PB-883-21-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.00034	0.00091	7/14/2022	7/19/2022
PB-883-21	PB-883-21-SS01	3	3.5	Cumene	SW8260C	Soil	0.00042	0.00091	7/14/2022	7/19/2022
PB-883-21	PB-883-21-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00046	7/14/2022	7/19/2022
PB-883-21	PB-883-21-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0032	0.0018	7/14/2022	7/19/2022
PB-883-21	PB-883-21-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00091	7/14/2022	7/19/2022
PB-883-21	PB-883-21-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/14/2022	7/19/2022
PB-883-21	PB-883-21-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0097	0.0018	7/14/2022	7/19/2022
PB-883-21	PB-883-21-SS01	3	3.5	Anthracene	SW8270D	Soil	0.74	0.11	7/14/2022	7/16/2022
PB-883-21	PB-883-21-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.0023	0.0018	7/14/2022	7/19/2022
PB-883-22	PB-883-22-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-22	PB-883-22-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	12/8/2021	12/20/2021
PB-883-22	PB-883-22-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-22	PB-883-22-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	12/8/2021	12/20/2021
PB-883-22	PB-883-22-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-22	PB-883-22-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	12/8/2021	12/20/2021
PB-883-22	PB-883-22-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	12/8/2021	12/20/2021
PB-883-22	PB-883-22-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-22	PB-883-22-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-22	PB-883-22-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-22	PB-883-22-SS01	3	3.5	Lead	SW6010D	Soil	4.03	2.25	12/8/2021	12/22/2021
PB-883-22	PB-883-22-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	12/8/2021	12/19/2021
PB-883-22	PB-883-22-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-22	PB-883-22-SS01	3	3.5	Cumene	SW8260C	Soil	0.00024	0.001	12/8/2021	12/19/2021
PB-883-22	PB-883-22-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00052	12/8/2021	12/19/2021
PB-883-22	PB-883-22-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	12/8/2021	12/19/2021
PB-883-22	PB-883-22-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-22	PB-883-22-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	12/8/2021	12/19/2021
PB-883-22	PB-883-22-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	12/8/2021	12/19/2021
PB-883-22	PB-883-22-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	12/8/2021	7/19/2022
PB-883-22	PB-883-22-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Naphthalene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0015	12/8/2021	12/19/2021
PB-883-23	PB-883-23-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00074	12/8/2021	12/19/2021
PB-883-23	PB-883-23-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.003	12/8/2021	7/19/2022
PB-883-23	PB-883-23-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.003	12/8/2021	12/19/2021
PB-883-23	PB-883-23-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0015	12/8/2021	12/19/2021
PB-883-23	PB-883-23-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.003	12/8/2021	12/19/2021
PB-883-23	PB-883-23-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.00074	12/8/2021	12/19/2021
PB-883-23	PB-883-23-SS01	4.5	5	Cumene	SW8260C	Soil	ND	0.0015	12/8/2021	12/19/2021
PB-883-23	PB-883-23-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.0015	12/8/2021	12/19/2021
PB-883-23	PB-883-23-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.003	12/8/2021	12/19/2021
PB-883-23	PB-883-23-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-23	PB-883-23-SS01	4.5	5	Lead	SW6010D	Soil	4.64	2.26	12/8/2021	12/22/2021
PB-883-24	PB-883-24-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-24	PB-883-24-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/8/2021	12/19/2021
PB-883-24	PB-883-24-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/8/2021	12/20/2021
PB-883-24	PB-883-24-SS01	3	3.5	Lead	SW6010D	Soil	4.46	2.27	12/8/2021	12/22/2021
PB-883-24	PB-883-24-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	12/8/2021	7/19/2022
PB-883-24	PB-883-24-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	12/8/2021	12/19/2021
PB-883-24	PB-883-24-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-24	PB-883-24-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/8/2021	12/19/2021
PB-883-24	PB-883-24-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00051	12/8/2021	12/19/2021
PB-883-24	PB-883-24-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-24	PB-883-24-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/8/2021	12/19/2021
PB-883-24	PB-883-24-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	12/8/2021	12/19/2021

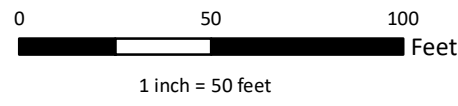
Notes:

SS -- Soil Sample.

File: N:\GIS\Project\PO44_001_PESRM-PES\MapDocs\AST\Work\Tank_Group_04\Fer_AST_Closure_Report\Figure 9_057A (PB 883).mxd 12/30/2022 Created by: JD Checked by: Initial Coordinate System: NAD_1983_StatePlane_Pennsylvania_South_FPS_3702_Feet



Legend	
Tank Group	04
	Associated Piping
	PESRM Soil Sample Location



<p>SAFETY FIRST</p>	<p>CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC</p>	<p>Site Location and Sampling Map 057A (PB 883)</p> <p>Figure 9</p>
	<p>PROJECT: Aboveground Storage Tank Closure</p>	
	<p>PROJECT NUMBER: P044.001.002</p>	



Photograph 1:
View of Tank 057A
(PB 883) during
demolition.



Photograph 2:
View of Tank 057A
(PB 883) during
demolition.



Photograph 3:
View of Tank 057A
(PB 883) during
demolition.



Photograph 4:
View of Tank 057A
(PB 883) during
demolition.



Photograph 5:

View of scrap piles and the concrete pad during demolition.

Product Movement and Waste Disposal Documentation (Tank 057A)



PES Project Load Ticket

Load Ticket: 17650

Date: 11-9-21

Sold to: Allegheny ^{Scrap}
Location: TANK 883
Carrier: Allegheny

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: TANK Plate

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade _____
- Other Alloy, Grade _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / Fill
- Sand Fill
- Crushed Stone
- Other: _____

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004 - D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

Scale Ticket #: _____

Gross Weight: 93060 lbs

Tare Weight: 41600 lbs

Net Weight: 51460 lbs

NorthStar Rep. Signature: CP

Received By: [Signature]

HILCO REDEVELOPMENT PARTNERS

3144 W. PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20031811

Date: 11/08/2021 8:49 AM

Phone: () -

Fax: () -

Customer: HILCO

HILCO

Order Number: 001

SCRAP REMOVAL

Tons: 85172.881

Loads: 5620

DT260-50 - TRUCK 260 W/ TRAILER 50

CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	25.73 tn						

Weight Information

Material	Gross	Tare	Net
SCRAP	83060.00	41600.00	51460.00

17650

THE MONSTERS



ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 058A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

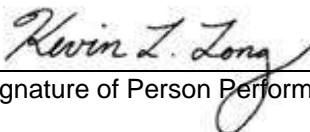
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 10 - 058A (PB 884)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-884-01	PB-884-01-SS01	3	3.5	Toluene	SW8260C	Soil	0.001	0.00092	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Chrysene	SW8270D	Soil	0.048	0.12	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.032	0.16	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.077	0.12	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.055	0.16	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.053	0.12	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Pyrene	SW8270D	Soil	0.031	0.12	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0024	0.0018	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.0048	0.0018	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Lead	SW6010D	Soil	24.5	2.28	12/3/2021	12/16/2021
PB-884-01	PB-884-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00092	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00088	0.0018	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Benzene	SW8260C	Soil	0.0003	0.00046	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Cumene	SW8260C	Soil	0.00072	0.00092	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.00023	0.00092	12/3/2021	12/15/2021
PB-884-01	PB-884-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00098	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-02	PB-884-02-SS01	3	3.5	Lead	SW6010D	Soil	5.62	2.36	12/3/2021	12/16/2021
PB-884-02	PB-884-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00098	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00098	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00049	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00098	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00049	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	12/3/2021	12/13/2021
PB-884-02	PB-884-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Pyrene	SW8270D	Soil	0.055	0.12	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.053	0.12	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.17	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.051	0.12	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.17	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Chrysene	SW8270D	Soil	0.048	0.12	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.21	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.21	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	12/3/2021	12/13/2021
PB-884-03	PB-884-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.033	0.12	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	Lead	SW6010D	Soil	8.8	2.49	12/3/2021	12/16/2021
PB-884-03	PB-884-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	12/3/2021	12/13/2021
PB-884-03	PB-884-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-03	PB-884-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	12/3/2021	12/13/2021
PB-884-03	PB-884-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00053	12/3/2021	12/13/2021
PB-884-03	PB-884-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/3/2021	12/13/2021
PB-884-03	PB-884-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	12/3/2021	12/13/2021
PB-884-03	PB-884-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00053	12/3/2021	12/13/2021
PB-884-03	PB-884-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	12/3/2021	12/13/2021
PB-884-03	PB-884-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/3/2021	12/13/2021
PB-884-03	PB-884-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	12/3/2021	12/13/2021
PB-884-04	PB-884-04-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.32	0.12	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.073	0.2	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Fluorene	SW8270D	Soil	0.35	0.2	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.015	0.0021	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Lead	SW6010D	Soil	6.72	2.43	12/3/2021	12/16/2021
PB-884-04	PB-884-04-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.00123	0.0021	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0045	0.0021	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00052	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Cumene	SW8260C	Soil	0.078	0.001	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-04	PB-884-04-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	0.0003	0.0021	12/3/2021	12/15/2021
PB-884-05	PB-884-05-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0016	12/6/2021	12/13/2021
PB-884-05	PB-884-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	12/6/2021	12/16/2021
PB-884-05	PB-884-05-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	12/6/2021	12/16/2021
PB-884-05	PB-884-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-884-05	PB-884-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/6/2021	12/16/2021
PB-884-05	PB-884-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-884-05	PB-884-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/6/2021	12/16/2021
PB-884-05	PB-884-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-884-05	PB-884-05-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-884-05	PB-884-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-884-05	PB-884-05-SS01	3	3.5	Lead	SW6010D	Soil	2.38	2.03	12/6/2021	12/19/2021
PB-884-05	PB-884-05-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0032	12/6/2021	12/13/2021
PB-884-05	PB-884-05-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0016	12/6/2021	12/13/2021
PB-884-05	PB-884-05-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0016	12/6/2021	12/13/2021
PB-884-05	PB-884-05-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0008	12/6/	

Table 10 - 058A (PB 884)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-884-06	PB-884-06-SS01	3.5	4	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/6/2021	12/15/2021
PB-884-06	PB-884-06-SS01	3.5	4	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/6/2021	12/15/2021
PB-884-06	PB-884-06-SS01	3.5	4	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/6/2021	12/15/2021
PB-884-06	PB-884-06-SS01	3.5	4	Chrysene	SW8270D	Soil	0.027	0.1	12/6/2021	12/15/2021
PB-884-06	PB-884-06-SS01	3.5	4	Fluorene	SW8270D	Soil	ND	0.17	12/6/2021	12/15/2021
PB-884-06	PB-884-06-SS01	3.5	4	Naphthalene	SW8270D	Soil	ND	0.17	12/6/2021	12/15/2021
PB-884-06	PB-884-06-SS01	3.5	4	Pyrene	SW8270D	Soil	0.039	0.1	12/6/2021	12/15/2021
PB-884-06	PB-884-06-SS01	3.5	4	Toluene	SW8260C	Soil	0.00069	0.0009	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	Phenanthrene	SW8270D	Soil	0.065	0.1	12/6/2021	12/15/2021
PB-884-06	PB-884-06-SS01	3.5	4	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	Anthracene	SW8270D	Soil	ND	0.1	12/6/2021	12/15/2021
PB-884-06	PB-884-06-SS01	3.5	4	Xylenes (total)	SW8260C	Soil	0.00193	0.0018	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0064	0.0018	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	1,2-Dichloroethane	SW8260C	Soil	ND	0.0009	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0042	0.0018	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	Benzene	SW8260C	Soil	0.0003	0.00045	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	Cumene	SW8260C	Soil	0.00039	0.0009	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	Ethyl Benzene	SW8260C	Soil	0.00052	0.0009	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	12/6/2021	12/16/2021
PB-884-06	PB-884-06-SS01	3.5	4	Lead	SW6010D	Soil	89	9.96	12/6/2021	12/19/2021
PB-884-07	PB-884-07-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Pyrene	SW8270D	Soil	0.043	0.1	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.03	0.1	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Chrysene	SW8270D	Soil	0.021	0.1	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0027	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0013	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Lead	SW6010D	Soil	2.61	2.04	12/6/2021	12/19/2021
PB-884-07	PB-884-07-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0027	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00066	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0027	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00066	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0013	12/6/2021	12/15/2021
PB-884-07	PB-884-07-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0027	12/6/2021	12/15/2021
PB-884-08	PB-884-08-SS01	4.5	5	Toluene	SW8260C	Soil	0.082	0.065	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	0.058	0.11	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.45	0.11	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Naphthalene	SW8270D	Soil	0.84	0.19	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Fluorene	SW8270D	Soil	0.25	0.19	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Chrysene	SW8270D	Soil	0.11	0.11	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	0.041	0.15	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	0.08	0.11	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	0.055	0.15	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Pyrene	SW8270D	Soil	0.13	0.11	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.033	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	2.1	0.13	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	5.4	0.13	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.065	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.66	0.13	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Benzene	SW8260C	Soil	0.15	0.033	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Cumene	SW8260C	Soil	0.08	0.065	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.14	0.065	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.13	7/14/2022	7/18/2022
PB-884-08	PB-884-08-SS01	4.5	5	Lead	SW6010D	Soil	60.2	4.36	7/14/2022	7/19/2022
PB-884-09	PB-884-09-SS01	3	3.5	Toluene	SW8260C	Soil	13	0.068	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.022	0.1	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	Pyrene	SW8270D	Soil	0.056	0.1	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.7	0.1	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	Naphthalene	SW8270D	Soil	3.2	0.17	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	Fluorene	SW8270D	Soil	0.25	0.17	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	Chrysene	SW8270D	Soil	0.092	0.1	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.034	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-09	PB-884-09-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	41	0.14	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	12	0.14	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.068	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	3.7	0.14	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	Benzene	SW8260C	Soil	2	0.034	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	Cumene	SW8260C	Soil	2.8	0.068	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	6.6	0.068	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.14	7/14/2022	7/20/2022
PB-884-09	PB-884-09-SS01	3	3.5	Lead	SW6010D	Soil	1.95	1.99	7/14/2022	7/19/2022
PB-884-10	PB-884-10-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-884-10	PB-884-10-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-884-10	PB-884-10-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	12/6/2021	12/20/2021
PB-884-10	PB-884-10-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	12/6/2021	12/20/2021
PB-884-10	PB-884-10-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-884-10	PB-884-10-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/6/2021	12/20/2021
PB-884-10	PB-884-10-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-884-10	PB-884-10-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/6/2021	12/20/2021
PB-884-10	PB-884-10-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-884-10	PB-884-10-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-884-10	PB-884-10-SS01	3	3.5	Lead	SW6010D	Soil	2.58	1.99	12/6/2021	12/19/2021
PB-884-10	PB-884-10-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	12/6/2021	12/13/2021
PB-884-10	PB-884-10-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-884-10	PB-884-10-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-884-10	PB-884-10-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00053	12/6/2021	12/13/2021
PB-884-10	PB-884-10-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	12/6/2021	12/13/2021
PB-884-10	PB-884-10-									

Table 10 - 058A (PB 884)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-884-11	PB-884-11-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.095	0.12	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.038	0.16	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Chrysene	SW8270D	Soil	0.087	0.12	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.21	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.068	0.21	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.065	0.12	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Pyrene	SW8270D	Soil	0.091	0.12	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.089	0.12	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Lead	SW6010D	Soil	37	2.43	12/3/2021	12/16/2021
PB-884-11	PB-884-11-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00051	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	12/3/2021	12/15/2021
PB-884-11	PB-884-11-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	12/3/2021	12/13/2021
PB-884-12	DUP-22	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	12/3/2021	12/13/2021
PB-884-12	DUP-22	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	DUP-22	3	3.5	Lead	SW6010D	Soil	54.3	2.37	12/3/2021	12/16/2021
PB-884-12	DUP-22	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	12/3/2021	12/13/2021
PB-884-12	DUP-22	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	12/3/2021	12/13/2021
PB-884-12	DUP-22	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/3/2021	12/13/2021
PB-884-12	DUP-22	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	12/3/2021	12/13/2021
PB-884-12	DUP-22	3	3.5	Benzene	SW8260C	Soil	ND	0.00054	12/3/2021	12/13/2021
PB-884-12	DUP-22	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/3/2021	12/13/2021
PB-884-12	DUP-22	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/3/2021	12/13/2021
PB-884-12	DUP-22	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-12	PB-884-12-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	Lead	SW6010D	Soil	5.65	2.4	12/3/2021	12/16/2021
PB-884-12	PB-884-12-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00059	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00059	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	12/3/2021	12/13/2021
PB-884-12	PB-884-12-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	12/3/2021	12/13/2021
PB-884-13	PB-884-13-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00052	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	7/14/2022	7/18/2022
PB-884-13	PB-884-13-SS01	3	3.5	Lead	SW6010D	Soil	3.2	2.13	7/14/2022	7/19/2022
PB-884-14	PB-884-14-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Lead	SW6010D	Soil	2.63	1.99	7/14/2022	7/19/2022
PB-884-14	PB-884-14-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-884-14	PB-884-14-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00054	7/14/2022	7/18/2022
PB-884-										

Table 10 - 058A (PB 884)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-884-15	PB-884-15-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.85	0.17	7/14/2022	7/18/2022
PB-884-15	PB-884-15-SS01	3	3.5	Fluorene	SW8270D	Soil	0.13	0.17	7/14/2022	7/18/2022
PB-884-15	PB-884-15-SS01	3	3.5	Chrysene	SW8270D	Soil	0.059	0.1	7/14/2022	7/18/2022
PB-884-15	PB-884-15-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-15	PB-884-15-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-15	PB-884-15-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-15	PB-884-15-SS01	3	3.5	Pyrene	SW8270D	Soil	0.036	0.1	7/14/2022	7/18/2022
PB-884-15	PB-884-15-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.029	7/14/2022	7/21/2022
PB-884-15	PB-884-15-SS01	3	3.5	Lead	SW6010D	Soil	1.68	2.02	7/14/2022	7/19/2022
PB-884-15	PB-884-15-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-15	PB-884-15-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	14	0.12	7/14/2022	7/21/2022
PB-884-15	PB-884-15-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	47	0.12	7/14/2022	7/21/2022
PB-884-15	PB-884-15-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.059	7/14/2022	7/21/2022
PB-884-15	PB-884-15-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	4.5	0.12	7/14/2022	7/21/2022
PB-884-15	PB-884-15-SS01	3	3.5	Benzene	SW8260C	Soil	2.6	0.029	7/14/2022	7/21/2022
PB-884-15	PB-884-15-SS01	3	3.5	Cumene	SW8260C	Soil	3.6	0.059	7/14/2022	7/21/2022
PB-884-15	PB-884-15-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	8.8	0.059	7/14/2022	7/21/2022
PB-884-15	PB-884-15-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.12	7/14/2022	7/21/2022
PB-884-16	PB-884-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0036	7/14/2022	7/18/2022
PB-884-16	PB-884-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0036	7/14/2022	7/18/2022
PB-884-16	PB-884-16-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-16	PB-884-16-SS01	3	3.5	Lead	SW6010D	Soil	1.86	2	7/14/2022	7/19/2022
PB-884-16	PB-884-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0009	7/14/2022	7/18/2022
PB-884-16	PB-884-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0018	7/14/2022	7/18/2022
PB-884-16	PB-884-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0036	7/14/2022	7/18/2022
PB-884-16	PB-884-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0009	7/14/2022	7/18/2022
PB-884-16	PB-884-16-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0018	7/14/2022	7/18/2022
PB-884-16	PB-884-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0018	7/14/2022	7/18/2022
PB-884-16	PB-884-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0036	7/14/2022	7/18/2022
PB-884-16	PB-884-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0018	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00058	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Lead	SW6010D	Soil	1.99	2.01	7/14/2022	7/19/2022
PB-884-17	PB-884-17-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00058	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	7/14/2022	7/18/2022
PB-884-17	PB-884-17-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Pyrene	SW8270D	Soil	ND	0.12	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.12	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Phenanthrene	SW8270D	Soil	ND	0.12	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	0.00054	0.0022	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Naphthalene	SW8270D	Soil	0.05	0.2	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.024	0.0011	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Cumene	SW8260C	Soil	0.0053	0.0011	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Benzene	SW8260C	Soil	0.035	0.00055	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.01	0.0022	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.033	0.0022	7/14/2022	7/18/2022
PB-884-18	PB-884-18-SS01	4.5	5	Lead	SW6010D	Soil	7.17	4.64	7/14/2022	7/19/2022
PB-884-18	PB-884-18-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	0.0275	0.0022	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.085	0.17	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.05	0.0023	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.04	0.1	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00057	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Lead	SW6010D	Soil	1.61	2.08	7/14/2022	7/20/2022
PB-884-19	PB-884-19-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.022	0.0023	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Benzene	SW8260C	Soil	0.00036	0.00057	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Cumene	SW8260C	Soil	0.0044	0.0011	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.0024	0.0011	7/14/2022	7/18/2022
PB-884-19	PB-884-19-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	7/14/2022	7/1

Table 10 - 058A (PB 884)

Sample/Analysis Information (Attachment for Section III.)

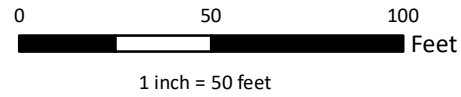
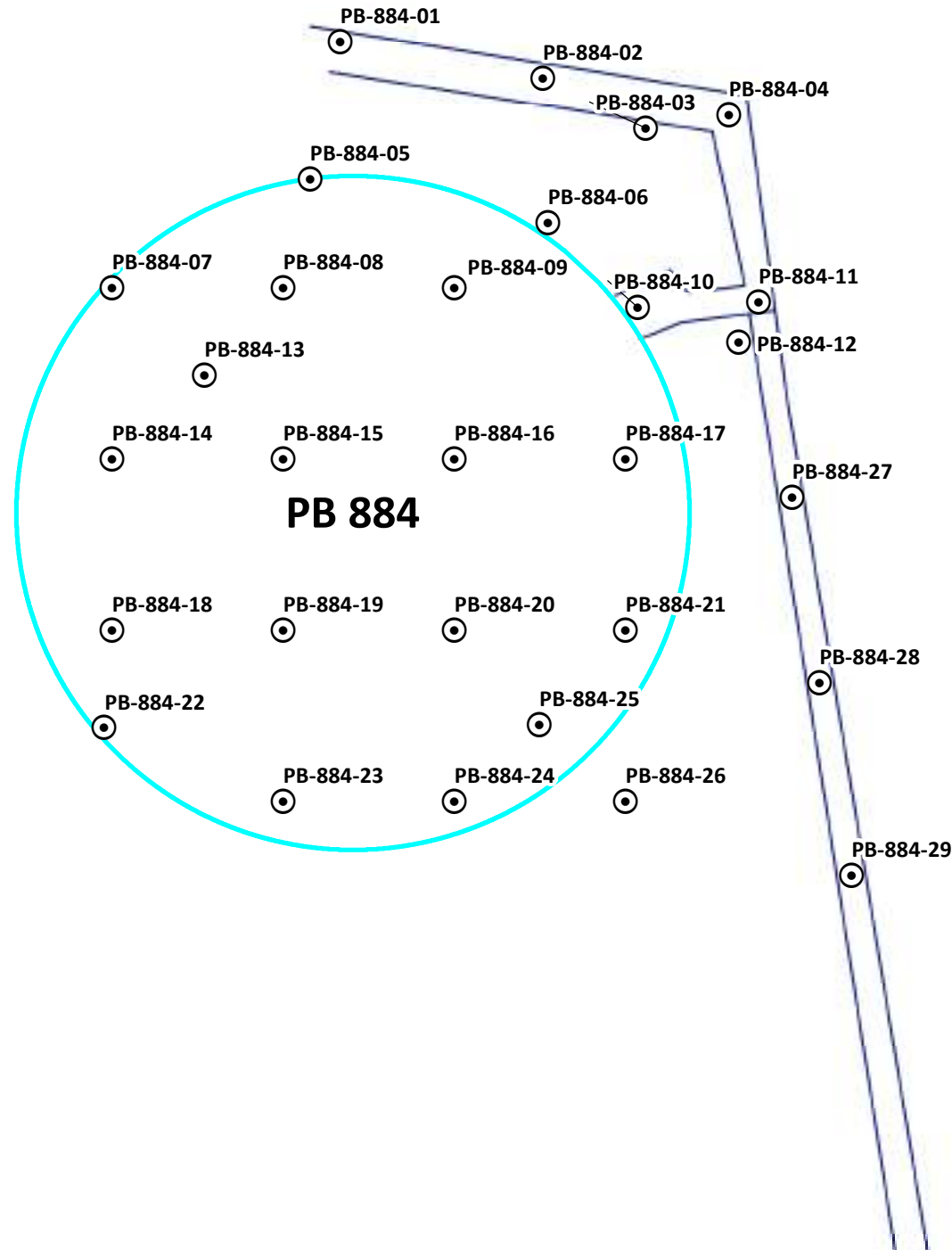
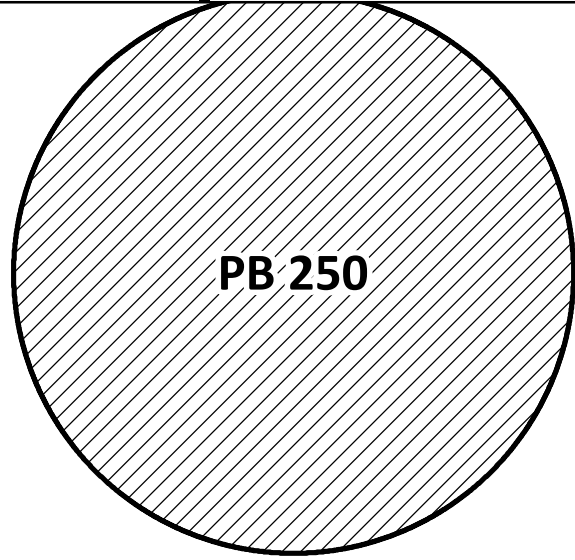
Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-884-20	PB-884-20-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00055	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00055	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Lead	SW6010D	Soil	1.04	2.06	7/14/2022	7/20/2022
PB-884-20	PB-884-20-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	7/14/2022	7/18/2022
PB-884-20	PB-884-20-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-884-21	PB-884-21-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	Lead	SW6010D	Soil	1.98	2.05	7/14/2022	7/20/2022
PB-884-21	PB-884-21-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00094	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00047	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00094	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00047	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00094	7/14/2022	7/18/2022
PB-884-21	PB-884-21-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00094	7/14/2022	7/18/2022
PB-884-22	PB-884-22-SS01	3	3.5	Lead	SW6010D	Soil	2.77	2.16	12/6/2021	12/19/2021
PB-884-22	PB-884-22-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0026	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00066	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0026	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0013	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	12/6/2021	12/15/2021
PB-884-22	PB-884-22-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00066	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	12/6/2021	12/15/2021
PB-884-22	PB-884-22-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	12/6/2021	12/15/2021
PB-884-22	PB-884-22-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	12/6/2021	12/15/2021
PB-884-22	PB-884-22-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/6/2021	12/15/2021
PB-884-22	PB-884-22-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	12/6/2021	12/15/2021
PB-884-22	PB-884-22-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	12/6/2021	12/15/2021
PB-884-22	PB-884-22-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	12/6/2021	12/15/2021
PB-884-22	PB-884-22-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0026	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0013	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0026	12/6/2021	12/13/2021
PB-884-22	PB-884-22-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/6/2021	12/15/2021
PB-884-22	PB-884-22-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	12/6/2021	12/15/2021
PB-884-23	PB-884-23-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-884-23	PB-884-23-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/18/2022
PB-884-23	PB-884-23-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-884-23	PB-884-23-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-884-23	PB-884-23-SS01	3	3.5	Lead	SW6010D	Soil	1.61	2.08	7/14/2022	7/20/2022
PB-884-23	PB-884-23-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	7/14/2022	7/19/2022
PB-884-23	PB-884-23-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-884-23	PB-884-23-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-884-23	PB-884-23-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	7/14/2022	7/19/2022
PB-884-23	PB-884-23-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-884-23	PB-884-23-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-884-23	PB-884-23-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/14/2022	7/19/2022
PB-884-24	PB-884-24-SS01	4.5	5	Anthracene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0025	7/15/2022	7/20/2022
PB-884-24	PB-884-24-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.042	0.12	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Naphthalene	SW8270D	Soil	0.082	0.2	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Fluorene	SW8270D	Soil	ND	0.2	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Chrysene	SW8270D	Soil	0.04	0.12	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	0.046	0.12	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	0.048	0.12	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Pyrene	SW8270D	Soil	0.051	0.12	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.13	0.0025	7/15/2022	7/20/2022
PB-884-24	PB-884-24-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-884-24	PB-884-24-SS01	4.5	5	Lead	SW6010D	Soil	45.9	11.7	7/15/2022	7/18/2022
PB-884-24	PB-884-24-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	0.095	0.0013	7/15/2022	7/20/2022
PB-884-24	PB-884-24-SS01	4.5	5	Cumene	SW8260C	Soil	0.03	0.0013	7/15/2022	7/20/2022
PB-884-24	PB-884-24-SS01	4.5	5	Benzene	SW8260C	Soil	0.034	0.00063	7/15/2022	7/20/2022
PB-884-24	PB-884-24-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.042	0.0025	7/15/2022	7/20/2022
PB-884-24	PB-884-24-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-884-24	PB-884-24-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00063	7/15/2022	7/2

Table 10 - 058A (PB 884)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-884-25	PB-884-25-SS01	4.5	5	Naphthalene	SW8270D	Soil	2.1	0.18	7/15/2022	7/18/2022
PB-884-25	PB-884-25-SS01	4.5	5	Anthracene	SW8270D	Soil	0.035	0.11	7/15/2022	7/18/2022
PB-884-25	PB-884-25-SS01	4.5	5	Pyrene	SW8270D	Soil	0.048	0.11	7/15/2022	7/18/2022
PB-884-25	PB-884-25-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	41	0.11	7/15/2022	7/21/2022
PB-884-25	PB-884-25-SS01	4.5	5	Phenanthrene	SW8270D	Soil	0.53	0.11	7/15/2022	7/18/2022
PB-884-25	PB-884-25-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.054	7/15/2022	7/20/2022
PB-884-25	PB-884-25-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	0.022	0.11	7/15/2022	7/18/2022
PB-884-25	PB-884-25-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.027	7/15/2022	7/20/2022
PB-884-25	PB-884-25-SS01	4.5	5	Lead	SW6010D	Soil	3.11	2.13	7/15/2022	7/18/2022
PB-884-25	PB-884-25-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	3.8	0.11	7/15/2022	7/20/2022
PB-884-25	PB-884-25-SS01	4.5	5	Benzene	SW8260C	Soil	7.1	0.027	7/15/2022	7/20/2022
PB-884-25	PB-884-25-SS01	4.5	5	Cumene	SW8260C	Soil	3	0.054	7/15/2022	7/20/2022
PB-884-25	PB-884-25-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	9.4	0.054	7/15/2022	7/20/2022
PB-884-25	PB-884-25-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.11	7/15/2022	7/20/2022
PB-884-25	PB-884-25-SS01	4.5	5	Toluene	SW8260C	Soil	15	0.11	7/15/2022	7/21/2022
PB-884-25	PB-884-25-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	12	0.11	7/15/2022	7/20/2022
PB-884-26	PB-884-26-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	12/6/2021	12/13/2021
PB-884-26	PB-884-26-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	Pyrene	SW8270D	Soil	0.025	0.12	12/6/2021	12/16/2021
PB-884-26	PB-884-26-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	12/6/2021	12/13/2021
PB-884-26	PB-884-26-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	12/6/2021	12/13/2021
PB-884-26	PB-884-26-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0006	12/6/2021	12/13/2021
PB-884-26	PB-884-26-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	12/6/2021	12/13/2021
PB-884-26	PB-884-26-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	12/6/2021	12/13/2021
PB-884-26	PB-884-26-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0006	12/6/2021	12/13/2021
PB-884-26	PB-884-26-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	12/6/2021	12/13/2021
PB-884-26	PB-884-26-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	12/6/2021	12/13/2021
PB-884-26	PB-884-26-SS01	3	3.5	Lead	SW6010D	Soil	26.5	2.31	12/6/2021	12/19/2021
PB-884-26	PB-884-26-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	12/6/2021	12/13/2021
PB-884-27	PB-884-27-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0005	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00025	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Lead	SW6010D	Soil	11.5	2.41	12/3/2021	12/16/2021
PB-884-27	PB-884-27-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0005	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00025	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0005	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0005	12/3/2021	12/15/2021
PB-884-27	PB-884-27-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.001	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.045	0.12	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Chrysene	SW8270D	Soil	0.038	0.12	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.039	0.12	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Pyrene	SW8270D	Soil	0.06	0.12	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.042	0.12	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Lead	SW6010D	Soil	9.37	2.39	12/3/2021	12/16/2021
PB-884-28	PB-884-28-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00096	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00048	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00096	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00096	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	12/3/2021	12/15/2021
PB-884-28	PB-884-28-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00096	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0009	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.21	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.21	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0009	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Lead	SW6010D	Soil	4.49	2.47	12/3/2021	12/16/2021
PB-884-29	PB-884-29-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00045	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0009	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0009	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	12/3/2021	12/15/2021
PB-884-29	PB-884-29-SS01</									

File: N:\GIS\Project\044_001_PESRM-PES\MapDocs\AST\Work\Tank Group 04\For AST Closure Report\Figure 10 - 058A (PB 884).mxd 12/30/2022 Created by: JD Checked by: Initial Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Site Location and Sampling Map 058A (PB 884) Figure 10
	PROJECT: Aboveground Storage Tank Closure	
	PROJECT NUMBER: P044.001.002	

Product Movement and Waste Disposal Documentation (Tank 058A)



PES Project Load Ticket

Load Ticket: 16968

Date: 10-26-21

#S120103

Sold to: Scrap
Location: York PA
Carrier: Highway

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+5
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: Tank Plate

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade _____
- Other Alloy, Grade _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / Fill
- Sand Fill
- Crushed Stone
- Other: _____

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- RB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004 -D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

Scale Ticket #: _____

Gross Weight: 77460 lbs

Tare Weight: 47400 lbs

Net Weight: 30060 lbs

NorthStar Rep. Signature: [Signature]

Received By: [Signature]

HILCO REDEVELOPEMENT PARTNERS
3144 W. PASSYUNK AVE

PHILADELPHIA PA, 19145

Ticket #: 20031158
Date: 10/20/2021 7:55 AM
Phone: () -
Fax: () -

Customer: HILCO
HILCO

Order Number: 001
SCRAP REMOVAL
Tons: 75635.376
Loads: 4993

DT326-1108 - TRACTOR 1108 TRAILER DT326
CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	17.54 In						

Weight Information

Material	Gross	Tare	Net
SCRAP	77480.00	42400.00	35080.00

16968



ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 059A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

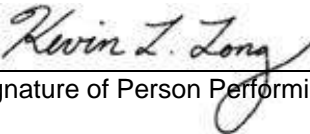
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

Section III

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 11 - 059A (PB 885)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-885-01	PB-885-01-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	12/6/2021	12/13/2021
PB-885-01	PB-885-01-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	12/6/2021	12/16/2021
PB-885-01	PB-885-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/6/2021	12/13/2021
PB-885-01	PB-885-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	12/6/2021	12/13/2021
PB-885-01	PB-885-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	12/6/2021	12/13/2021
PB-885-01	PB-885-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/6/2021	12/13/2021
PB-885-01	PB-885-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/6/2021	12/13/2021
PB-885-01	PB-885-01-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00051	12/6/2021	12/13/2021
PB-885-01	PB-885-01-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	12/6/2021	12/13/2021
PB-885-01	PB-885-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/6/2021	12/13/2021
PB-885-01	PB-885-01-SS01	3	3.5	Lead	SW6010D	Soil	150	11.1	12/6/2021	12/19/2021
PB-885-01	PB-885-01-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00099	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.031	0.12	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	Chrysene	SW8270D	Soil	0.036	0.12	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.048	0.15	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.075	0.12	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	0.054	0.15	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/6/2021	12/20/2021
PB-885-02	PB-885-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00099	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00099	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00099	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	12/6/2021	12/13/2021
PB-885-02	PB-885-02-SS01	3	3.5	Lead	SW6010D	Soil	43.9	11.3	12/6/2021	12/19/2021
PB-885-03	PB-885-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	12/6/2021	12/20/2021
PB-885-03	PB-885-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00054	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-03	PB-885-03-SS01	3	3.5	Lead	SW6010D	Soil	2.68	2.05	12/6/2021	12/19/2021
PB-885-04	PB-885-04-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00091	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-04	PB-885-04-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-04	PB-885-04-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-04	PB-885-04-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-04	PB-885-04-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-04	PB-885-04-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-04	PB-885-04-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-04	PB-885-04-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-04	PB-885-04-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-04	PB-885-04-SS01	3	3.5	Lead	SW6010D	Soil	1.56	2	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00091	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00091	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00046	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00091	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/14/2022	7/19/2022
PB-885-04	PB-885-04-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/14/2022	7/19/2022
PB-885-05	PB-885-05-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/14/2022	7/19/2022
PB-885-05	PB-885-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-05	PB-885-05-SS01	3	3.5	Lead	SW6010D	Soil	1.39	1.97	7/14/2022	7/19/2022
PB-885-05	PB-885-05-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00047	7/14/2022	7/19/2022
PB-885-05	PB-885-05-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00095	7/14/2022	7/19/2022
PB-885-05	PB-885-05-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019		

Table 11 - 059A (PB 885)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-885-06	PB-885-06-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/7/2021	12/19/2021
PB-885-06	PB-885-06-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Lead	SW6010D	Soil	2.41	2.07	12/7/2021	12/21/2021
PB-885-06	PB-885-06-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	12/7/2021	12/19/2021
PB-885-06	PB-885-06-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00056	12/7/2021	12/19/2021
PB-885-06	PB-885-06-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/7/2021	12/19/2021
PB-885-06	PB-885-06-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/7/2021	12/19/2021
PB-885-06	PB-885-06-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00056	12/7/2021	12/19/2021
PB-885-06	PB-885-06-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/7/2021	12/19/2021
PB-885-06	PB-885-06-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/7/2021	12/19/2021
PB-885-06	PB-885-06-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	12/7/2021	12/19/2021
PB-885-07	PB-885-07-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-07	PB-885-07-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-07	PB-885-07-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	12/6/2021	12/20/2021
PB-885-07	PB-885-07-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-07	PB-885-07-SS01	3	3.5	Lead	SW6010D	Soil	17.4	2.15	12/6/2021	12/19/2021
PB-885-07	PB-885-07-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00056	12/6/2021	12/13/2021
PB-885-07	PB-885-07-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-07	PB-885-07-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-07	PB-885-07-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00056	12/6/2021	12/13/2021
PB-885-07	PB-885-07-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-07	PB-885-07-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-07	PB-885-07-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-08	PB-885-08-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00083	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.35	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.35	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.21	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.28	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.21	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.28	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.21	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.21	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.21	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00042	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.21	12/6/2021	12/20/2021
PB-885-08	PB-885-08-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00083	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00042	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00083	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00083	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	12/6/2021	12/15/2021
PB-885-08	PB-885-08-SS01	3	3.5	Lead	SW6010D	Soil	9.07	2.01	12/6/2021	12/19/2021
PB-885-09	PB-885-09-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Lead	SW6010D	Soil	7.61	2.39	12/6/2021	12/19/2021
PB-885-09	PB-885-09-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	12/6/2021	12/15/2021
PB-885-09	PB-885-09-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	12/6/2021	12/15/2021
PB-885-10	PB-885-10-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	12/6/2021	12/15/2021
PB-885-10	PB-885-10-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	12/6/2021	12/15/2021
PB-885-10	PB-885-10-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	12/6/2021	12/16/2021
PB-885-10	PB-885-10-SS01	3	3.5	Lead	SW6010D	Soil	3.04	2.03	12/6/2021	12/19/2021
PB-885-10	PB-885-10-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	12/6/2021	12/15/2021
PB-885-10	PB-885-10-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00058	12/6/2021	12/15/2021
PB-885-10	PB-885-10-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	12/6/2021	12/15/2021
PB-885-10	PB-885-10-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C					

Table 11 - 059A (PB 885)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-885-11	PB-885-11-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.21	12/6/2021	12/16/2021
PB-885-11	PB-885-11-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.21	12/6/2021	12/16/2021
PB-885-11	PB-885-11-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-885-11	PB-885-11-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.17	12/6/2021	12/16/2021
PB-885-11	PB-885-11-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-885-11	PB-885-11-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.17	12/6/2021	12/16/2021
PB-885-11	PB-885-11-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-885-11	PB-885-11-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-885-11	PB-885-11-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	12/6/2021	12/15/2021
PB-885-11	PB-885-11-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-885-11	PB-885-11-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	12/6/2021	12/15/2021
PB-885-11	PB-885-11-SS01	3	3.5	Lead	SW6010D	Soil	6.43	2.5	12/6/2021	12/19/2021
PB-885-11	PB-885-11-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00053	12/6/2021	12/15/2021
PB-885-11	PB-885-11-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/6/2021	12/15/2021
PB-885-11	PB-885-11-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	12/6/2021	12/15/2021
PB-885-11	PB-885-11-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00053	12/6/2021	12/15/2021
PB-885-11	PB-885-11-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/6/2021	12/15/2021
PB-885-11	PB-885-11-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/6/2021	12/15/2021
PB-885-11	PB-885-11-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	12/6/2021	12/15/2021
PB-885-12	PB-885-12-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00087	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-12	PB-885-12-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-12	PB-885-12-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-12	PB-885-12-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-12	PB-885-12-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-12	PB-885-12-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-12	PB-885-12-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-12	PB-885-12-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-12	PB-885-12-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-12	PB-885-12-SS01	3	3.5	Lead	SW6010D	Soil	1.33	1.97	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00087	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00087	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00043	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00087	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00043	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-12	PB-885-12-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00095	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-13	PB-885-13-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	Lead	SW6010D	Soil	1.72	1.99	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00095	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00048	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00095	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00095	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	7/14/2022	7/19/2022
PB-885-13	PB-885-13-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00084	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-14	PB-885-14-SS01	3	3.5	Lead	SW6010D	Soil	1.45	1.95	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00042	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00084	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00042	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00084	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00084	7/14/2022	7/19/2022
PB-885-14	PB-885-14-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-15	PB-885-15-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0009	7/14/2022	7/19/2022
PB-885-15	PB-885-15-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-15	PB-885-15-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-15	PB-885-15-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-15	PB-885-15-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-15	PB-885-15-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-15	PB-885-15-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-15	PB-885-15-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-15	PB-885-15-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-15	PB-885-15-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-15	PB-885-15-SS01	3	3.5	Lead	SW6010D	Soil	1.48	1.98	7/14/2022	7/19/2022
PB-885-15	PB-885-15-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/14/2022	7/19/2022
PB-885-15	PB-885-15-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0009	7/14/2022	7/19/2022
PB-885-15	PB-885-15-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0009	7/14/2022	7/19/2022
PB-885-15	PB-885-15-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00045	7/14/2022	7/19/2022
PB-885-15	PB-885-15-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/14/2022	7/19/2022
PB-885-15	PB-885-15-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0009	7/14/2022	7/19/2022
PB-885-15	PB-885-15-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	7/14/2022	7/19/2022
PB-885-15	PB-885-1									

Table 11 - 059A (PB 885)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-885-16	PB-885-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/6/2021	12/16/2021
PB-885-16	PB-885-16-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-885-16	PB-885-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/6/2021	12/16/2021
PB-885-16	PB-885-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/6/2021	12/16/2021
PB-885-16	PB-885-16-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-885-16	PB-885-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-885-16	PB-885-16-SS01	3	3.5	Lead	SW6010D	Soil	8.76	11.4	12/6/2021	12/19/2021
PB-885-16	PB-885-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00056	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00056	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	12/6/2021	12/13/2021
PB-885-16	PB-885-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/6/2021	12/16/2021
PB-885-17	DUP-45	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	Toluene	SW8260C	Soil	ND	0.00093	7/15/2022	7/19/2022
PB-885-17	DUP-45	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	Lead	SW6010D	Soil	2.24	2.16	7/15/2022	7/21/2022
PB-885-17	DUP-45	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-885-17	DUP-45	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	DUP-45	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-885-17	DUP-45	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	7/15/2022	7/19/2022
PB-885-17	DUP-45	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00093	7/15/2022	7/19/2022
PB-885-17	DUP-45	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-885-17	DUP-45	3	3.5	Benzene	SW8260C	Soil	ND	0.00046	7/15/2022	7/19/2022
PB-885-17	DUP-45	3	3.5	Cumene	SW8260C	Soil	ND	0.00093	7/15/2022	7/19/2022
PB-885-17	DUP-45	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00093	7/15/2022	7/19/2022
PB-885-17	DUP-45	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00082	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0016	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-17	PB-885-17-SS01	3	3.5	Lead	SW6010D	Soil	1.53	2.21	7/15/2022	7/21/2022
PB-885-17	PB-885-17-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0016	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00041	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00082	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0016	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00041	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00082	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00082	7/15/2022	7/19/2022
PB-885-17	PB-885-17-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0016	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0009	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/15/2022	7/18/2022
PB-885-18	PB-885-18-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	Lead	SW6010D	Soil	1.49	2.06	7/15/2022	7/21/2022
PB-885-18	PB-885-18-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0009	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00045	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0009	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0009	7/15/2022	7/19/2022
PB-885-18	PB-885-18-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-885-19	PB-885-19-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-885-19	PB-885-19-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-19	PB-885-19-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-885-19	PB-885-19-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-19	PB-885-19-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-885-19	PB-885-19-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-19	PB-885-19-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-19	PB-885-19-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-19	PB-885-19-SS01	3	3.5	Lead	SW6010D	Soil	1.93	2.13	7/15/2022	7/21/2022
PB-885-19	PB-885-19-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00044	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00044	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-885-19	PB-885-19-SS01	3	3.5	Anthracene						

Table 11 - 059A (PB 885)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-885-20	PB-885-20-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-20	PB-885-20-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-20	PB-885-20-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-20	PB-885-20-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-20	PB-885-20-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00099	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-20	PB-885-20-SS01	3	3.5	Lead	SW6010D	Soil	1.63	1.97	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-20	PB-885-20-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00049	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00099	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00049	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00099	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00099	7/14/2022	7/19/2022
PB-885-20	PB-885-20-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/14/2022	7/19/2022
PB-885-21	PB-885-21-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	12/7/2021	12/17/2021
PB-885-21	PB-885-21-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/7/2021	12/17/2021
PB-885-21	PB-885-21-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Lead	SW6010D	Soil	3.11	2.06	12/7/2021	12/21/2021
PB-885-21	PB-885-21-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0022	12/7/2021	12/17/2021
PB-885-21	PB-885-21-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00056	12/7/2021	12/17/2021
PB-885-21	PB-885-21-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	12/7/2021	12/17/2021
PB-885-21	PB-885-21-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0022	12/7/2021	12/17/2021
PB-885-21	PB-885-21-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00056	12/7/2021	12/17/2021
PB-885-21	PB-885-21-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	12/7/2021	12/17/2021
PB-885-21	PB-885-21-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	12/7/2021	12/17/2021
PB-885-21	PB-885-21-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0022	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Lead	SW6010D	Soil	4.76	4.73	12/7/2021	12/22/2021
PB-885-22	PB-885-22-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	12/7/2021	12/17/2021
PB-885-22	PB-885-22-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	12/7/2021	12/21/2021
PB-885-22	PB-885-22-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	12/7/2021	12/17/2021
PB-885-23	DUP-23	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	2.4	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	3.2	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	2.4	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	3.2	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Chrysene	SW8270D	Soil	ND	2.4	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Fluorene	SW8270D	Soil	14	4	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Naphthalene	SW8270D	Soil	ND	4	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Pyrene	SW8270D	Soil	2.9	2.4	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Toluene	SW8260C	Soil	ND	0.067	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	Phenanthrene	SW8270D	Soil	29	2.4	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Lead	SW6010D	Soil	6.69	2.29	12/7/2021	12/21/2021
PB-885-23	DUP-23	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.13	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	Ethyl Benzene	SW8260C	Soil	0.016	0.067	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	Cumene	SW8260C	Soil	2	0.067	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	Benzene	SW8260C	Soil	ND	0.034	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.13	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.067	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.034	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.054	0.13	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	Xylenes (total)	SW8260C	Soil	0.101	0.13	12/7/2021	12/20/2021
PB-885-23	DUP-23	3	3.5	Anthracene	SW8270D	Soil	3.7	2.4	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	Lead	SW6010D	Soil	2.8	2.08	12/7/2021	12/21/2021
PB-885-23	PB-885-23-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00058	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00058	12/7/2021	12/17/2021
PB-885-23	PB-885-23-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/7/2021	12/21/2021
PB-885-24	PB-885-24-SS01									

Table 11 - 059A (PB 885)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-885-24	PB-885-24-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-885-24	PB-885-24-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-24	PB-885-24-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-24	PB-885-24-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-885-24	PB-885-24-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00058	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-885-24	PB-885-24-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0023	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00058	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	7/15/2022	7/19/2022
PB-885-24	PB-885-24-SS01	3	3.5	Lead	SW6010D	Soil	1.63	2.16	7/15/2022	7/21/2022
PB-885-25	PB-885-25-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00085	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00042	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	7/14/2022	7/16/2022
PB-885-25	PB-885-25-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00085	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00042	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00085	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00085	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/14/2022	7/19/2022
PB-885-25	PB-885-25-SS01	3	3.5	Lead	SW6010D	Soil	1.5	1.97	7/14/2022	7/20/2022
PB-885-26	PB-885-26-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Lead	SW6010D	Soil	2.28	2.05	12/7/2021	12/21/2021
PB-885-26	PB-885-26-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0006	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0006	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	12/7/2021	12/17/2021
PB-885-26	PB-885-26-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	12/7/2021	12/21/2021

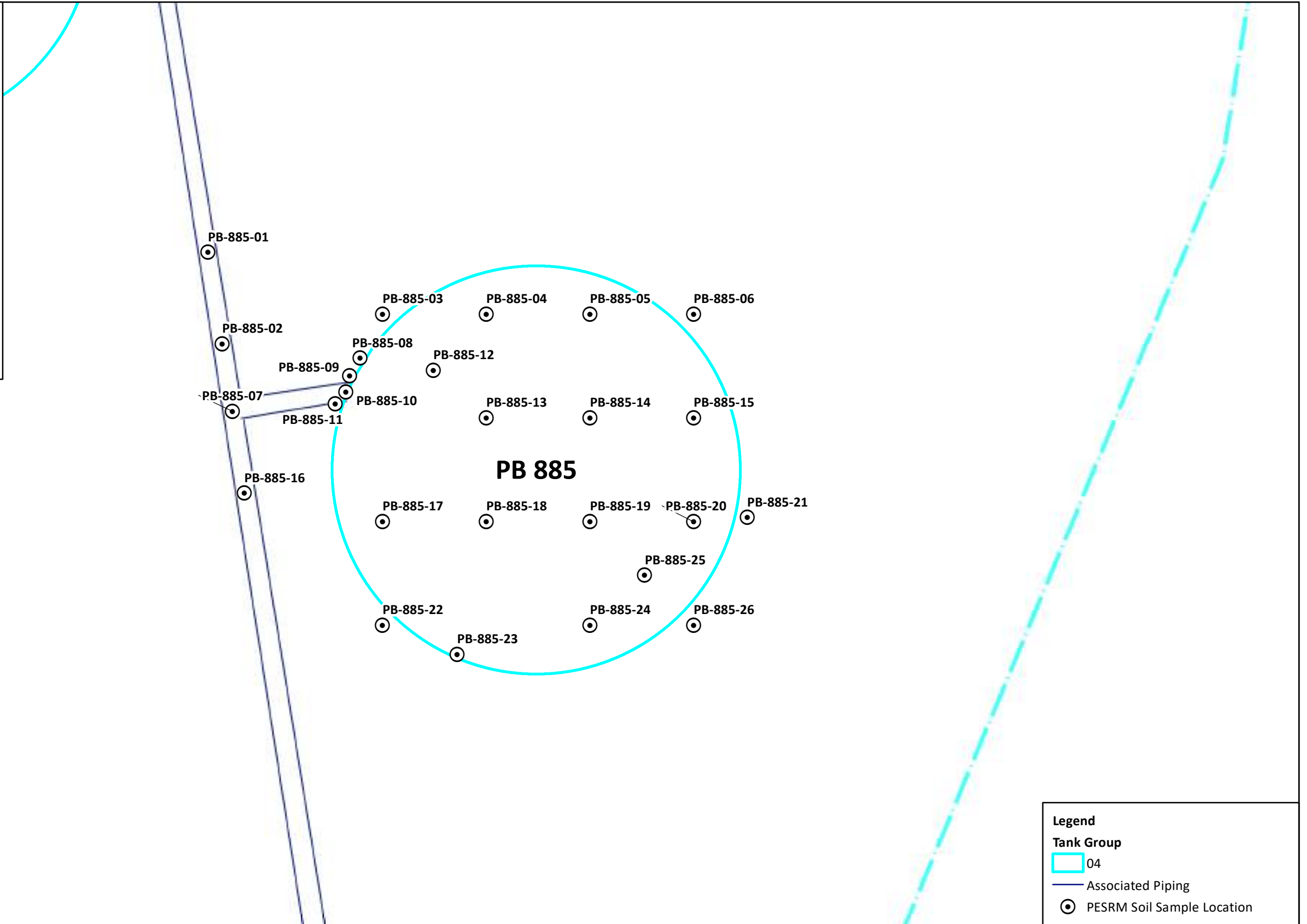
Notes:

SS -- Soil Sample.

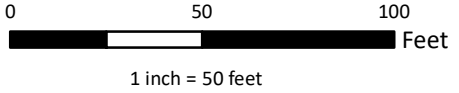
DUP-23 is a field duplicate associated with sample PB-885-23-SS01.

DUP-45 is a field duplicate associated with sample PB-885-17-SS01.

File: N:\GIS\PI\PO44_001_PESRM-PES\MXDS\AST\Work\Tank Group 04\For AST Closure Report\Figure 11 - 059A (PB 885).mxd 12/30/2022 Created by: JD Checked by: Initial Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



- Legend**
- Tank Group 04
 - Associated Piping
 - PESRM Soil Sample Location



SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Site Location and Sampling Map 059A (PB 885)
	PROJECT: Aboveground Storage Tank Closure	
PROJECT NUMBER: P044.001.002		

Figure 11

Product Movement and Waste Disposal Documentation (Tank 059A)



PES Project Load Ticket

#SK20103

Load Ticket: 14728

Date: 08-30-21

Sold to: Allegheny **Scrap**
Location: Tank 905
Carrier: Allegheny

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: _____

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade _____
- Other Alloy, Grade _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / Fill
- Sand Fill
- Crushed Stone
- Other: _____

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (Flammable D001, corrosive D002, reactive D003, toxicity D004-D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

NorthStar Rep. Signature: _____

Scale Ticket #: _____

Gross Weight: 72520 lbs

Tare Weight: 40000 lbs

Net Weight: 32520 lbs

NorthStar Rep. Signature: [Signature]

Received By: [Signature]

HILCO REDEVELOPEMENT PARTNERS
3144 W. PASSYUNK AVE
PHILADELPHIA PA, 19145

Ticket #: 20029735
Date: 08/30/2021 7:37 AM
Phone: () -
Fax: () -

Customer: HILCO
HILCO

Order Number: 001
SCRAP REMOVAL
Tons: 52984.178
Loads 3582

DT261-2 - ALLEGHENY TRUCK 261 W/TRAILER 2
CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

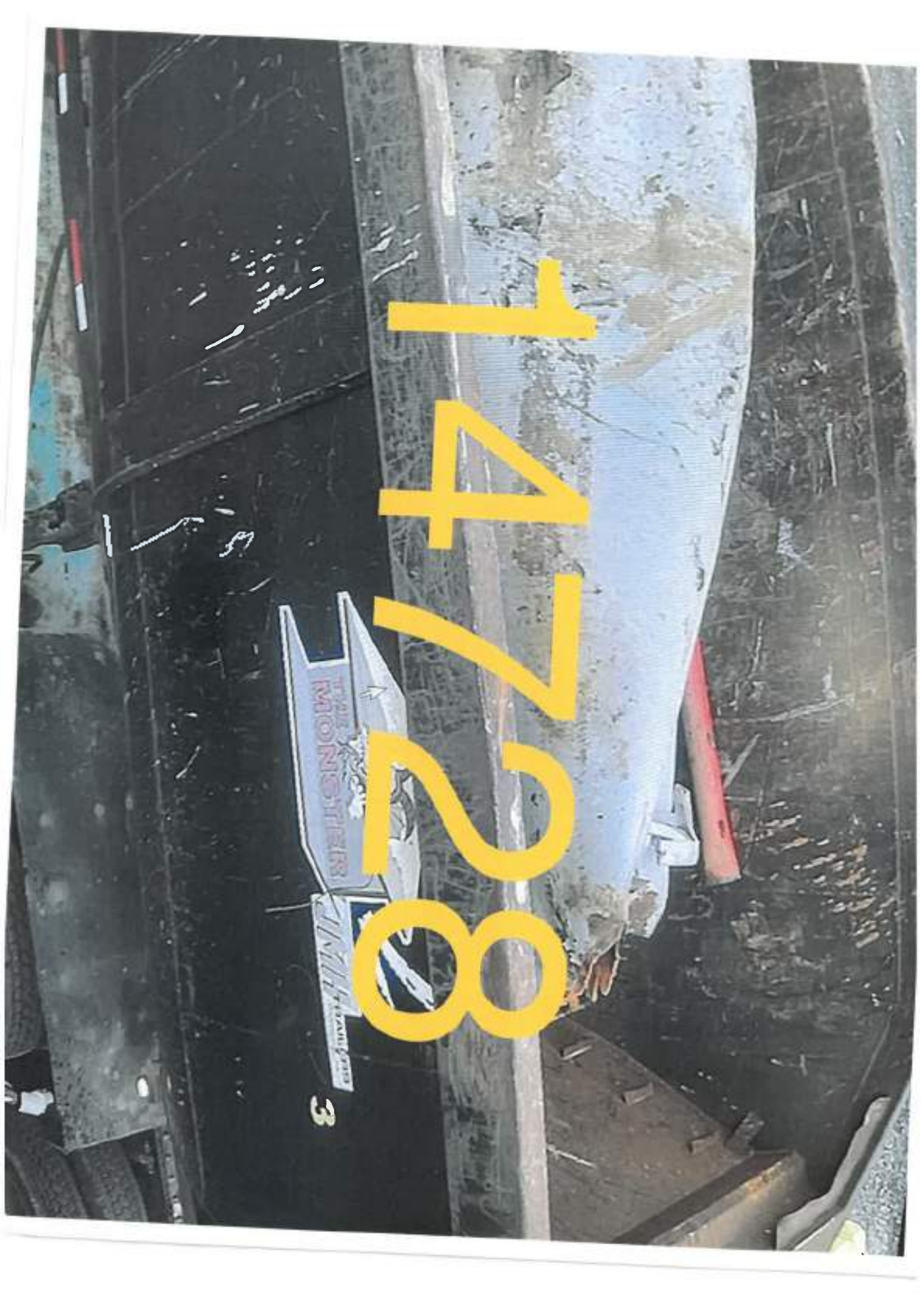
Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	16.26 In						

Weight Information

Material	Gross	Tare	Net
SCRAP	72520 00	43000 00	32520 00

14728

3



ABOVEGROUND STORAGE TANK SYSTEM CLOSURE REPORT FORM

SECTION III. Site Assessment Information

Tank Registration # 012A (complete one sheet for EACH tank system and attach ALL laboratory sheets pertaining to that system)

Facility ID Number 51 - 33620

A. Provide depth of *BEDROCK* and *WATER* IF encountered during excavation or soil boring (write "N/A": if NOT encountered).

Bedrock N/A feet below land surface Water 15 feet below land surface

B. Provide Length of *PIPING* IF piping was closed-in-place (write "N/A" if NOT closed-in-place).

Length of piping N/A feet

C. TANK SYSTEM REMOVED FROM THE GROUND/SITE

1). Was obvious contamination observed while excavating, sampling or removing the tank system?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records -----> Do not complete item C.2. below.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

_____ -----> Complete item C.2. below.

2). Was contamination localized (within three feet of the tank system in every direction with no obvious water contamination)?

YES -----> Remove or remediate contaminated soil -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

NO -----> Continue Interim Remedial Actions -----> See end of this section for options on submission and maintenance of closure records.

D. TANK SYSTEM CLOSED-IN-PLACE OR CHANGED-IN-SERVICE

Was obvious contamination observed during sampling, boring or assessing water depths?

NO -----> Conduct confirmatory sampling -----> See end of this section for options on submission and maintenance of closure records.

YES -----> Report release to DEP within 24 hours -----> Describe contamination observed and likely source(s) (tank, piping, dispenser, spills, overfills): _____

Continue with corrective action -----> See end of this section for options on submission and maintenance of closure records.

E. If the answer to C.1. is "no", the answer to C.2. is "yes" or the answer to D. is "no", confirmatory samples are required. Use the sample/analysis information sheet on page 10 of 11 to provide the information on confirmatory sampling and complete the diagram on Page 11 of 11.

Options for Submission and Maintenance of Closure Site Assessment Records

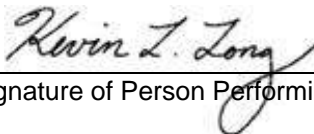
Records of the site assessment must be maintained for at least three years after completion of permanent closure or change-in-service in one of the following ways:

- (a) By the owners and operators who took the tank system out of service;
- (b) By the current owners and operators of the tank system site; or
- (c) By mailing these records to the DEP regional office responsible for the county in which the tank is located if they cannot be maintained at the closed facility.

Where the results of the site assessment indicate that obvious, localized soil contamination was encountered and the analytical results of the confirmatory sampling show levels below the statewide standard/action levels, this closure report form (Sections I, II, and III) or some other acceptable site characterization report must be received by the Department within 180 days of verbally reporting the release.

Where the results of the site assessment indicate that no obvious contamination or obvious, localized contamination was encountered, but the analytical results of the confirmatory sampling show levels above the statewide standard/action levels, or where there is obvious, extensive contamination, Section 245.310(a)(8) of the Corrective Action Process (CAP) regulations requires that details of removal from service be included in the site characterization report. A copy of the completed closure report form should be submitted as part of the site characterization report to satisfy the requirements of Section 245.310(a)(8) of the CAP regulations.

I, Kevin Long , hereby certify, under penalty of law as provided in 18 Pa. C.S. §4904 (relating to unsworn falsification to authorities) that I am the person who performed the site assessment activities associated with the closure of the above referenced storage tank system(s) and that the information provided by me in this closure report (Section III) is true, accurate and complete to the best of my knowledge and belief.



Signature of Person Performing Site Assessment

2 / 1 / 2023

Date

Principal Consultant

Title of Person Performing Site Assessment

Terraphase Engineering, Inc.

Name of Company Performing Site Assessment

609-236-8171 x93

Telephone Number of Person Performing Site Assessment

N - Samples placed in soil sample vial without a preservative present.

Site Location and Sampling Map - Use this page or suitable facsimile to provide a large-scale map of the site where storage tank systems were closed. Scales between 1" = 10 and 1" = 100 feet frequently work well. Include the following information as each applies to the site: facility name and I.D., county, township or borough, property boundaries or area of interest, buildings, roads and streets with names or route numbers, utilities, location and ID number of storage tank systems removed including piping and dispensers, soil stockpile locations, excavations or other locations of product recovery, north arrow, approximate map scale and legend. Also, show depth and location of samples with sample ID numbers cross-referenced to the same ID numbers shown on Page 10 of 11.

Facility Name and ID: -

County:

Township/Borough: See attached Figure

Table 2 - 012A (PB 886)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-886-01	PB-886-01-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00097	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00048	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0019	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0019	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00097	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0019	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00048	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00097	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00097	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	10/7/2021	10/13/2021
PB-886-01	PB-886-01-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-01	PB-886-01-SS01	3	3.5	Lead	SW6010D	Soil	6.35	4.55	10/7/2021	10/13/2021
PB-886-02	PB-886-02-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00091	10/7/2021	10/12/2021
PB-886-02	PB-886-02-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	10/7/2021	10/12/2021
PB-886-02	PB-886-02-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-02	PB-886-02-SS01	3	3.5	Lead	SW6010D	Soil	5.8	4.64	10/7/2021	10/13/2021
PB-886-02	PB-886-02-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	10/7/2021	10/12/2021
PB-886-02	PB-886-02-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00046	10/7/2021	10/12/2021
PB-886-02	PB-886-02-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00091	10/7/2021	10/12/2021
PB-886-02	PB-886-02-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	10/7/2021	10/12/2021
PB-886-02	PB-886-02-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00046	10/7/2021	10/12/2021
PB-886-02	PB-886-02-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00091	10/7/2021	10/12/2021
PB-886-02	PB-886-02-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00091	10/7/2021	10/12/2021
PB-886-02	PB-886-02-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Lead	SW6010D	Soil	6.5	4.81	10/7/2021	10/13/2021
PB-886-03	PB-886-03-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00051	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00051	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	10/7/2021	10/12/2021
PB-886-03	PB-886-03-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/14/2021
PB-886-03	PB-886-03-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-04	PB-886-04-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.16	10/7/2021	10/11/2021
PB-886-04	PB-886-04-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-04	PB-886-04-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.16	10/7/2021	10/11/2021
PB-886-04	PB-886-04-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-04	PB-886-04-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	10/7/2021	10/11/2021
PB-886-04	PB-886-04-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	10/7/2021	10/11/2021
PB-886-04	PB-886-04-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-04	PB-886-04-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.043	0.12	10/7/2021	10/11/2021
PB-886-04	PB-886-04-SS01	3	3.5	Lead	SW6010D	Soil	8.09	4.65	10/7/2021	10/13/2021
PB-886-04	PB-886-04-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.00014	0.001	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	Cumene	SW8260C	Soil	0.00018	0.001	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	10/7/2021	10/12/2021
PB-886-04	PB-886-04-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00084	10/7/2021	10/12/2021
PB-886-05	PB-886-05-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-05	PB-886-05-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00042	10/7/2021	10/12/2021
PB-886-05	PB-886-05-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	10/7/2021	10/12/2021
PB-886-05	PB-886-05-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	10/7/2021	10/12/2021
PB-886-05	PB-886-05-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00084	10/7/2021	10/12/2021
PB-886-05	PB-886-05-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	10/7/2021	10/12/2021
PB-886-05	PB-886-05-SS01	3	3.5	Benzene						

Table 2 - 012A (PB 886)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-886-06	PB-886-06-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-06	PB-886-06-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Lead	SW6010D	Soil	2.26	2.2	7/15/2022	7/18/2022
PB-886-06	PB-886-06-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-06	PB-886-06-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00054	7/15/2022	7/19/2022
PB-886-06	PB-886-06-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	7/15/2022	7/19/2022
PB-886-06	PB-886-06-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-06	PB-886-06-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00054	7/15/2022	7/19/2022
PB-886-06	PB-886-06-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	7/15/2022	7/19/2022
PB-886-06	PB-886-06-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	7/15/2022	7/19/2022
PB-886-06	PB-886-06-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0024	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0047	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0047	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	Lead	SW6010D	Soil	2.62	2.23	7/15/2022	7/18/2022
PB-886-07	PB-886-07-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0024	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0047	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0024	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0024	7/15/2022	7/19/2022
PB-886-07	PB-886-07-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0047	7/15/2022	7/19/2022
PB-886-08	PB-886-08-SS01	4.5	5	Toluene	SW8260C	Soil	ND	0.075	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	Naphthalene	SW8270D	Soil	0.062	0.18	10/7/2021	10/11/2021
PB-886-08	PB-886-08-SS01	4.5	5	Fluorene	SW8270D	Soil	0.88	0.18	10/7/2021	10/11/2021
PB-886-08	PB-886-08-SS01	4.5	5	Chrysene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-08	PB-886-08-SS01	4.5	5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-08	PB-886-08-SS01	4.5	5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-08	PB-886-08-SS01	4.5	5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-08	PB-886-08-SS01	4.5	5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-08	PB-886-08-SS01	4.5	5	Pyrene	SW8270D	Soil	0.1	0.1	10/7/2021	10/11/2021
PB-886-08	PB-886-08-SS01	4.5	5	Phenanthrene	SW8270D	Soil	1.7	0.1	10/7/2021	10/11/2021
PB-886-08	PB-886-08-SS01	4.5	5	Lead	SW6010D	Soil	81.9	2.1	10/7/2021	10/12/2021
PB-886-08	PB-886-08-SS01	4.5	5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.15	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	Ethyl Benzene	SW8260C	Soil	ND	0.075	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	Cumene	SW8260C	Soil	0.015	0.075	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	Benzene	SW8260C	Soil	ND	0.038	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.15	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	1,2-Dichloroethane	SW8260C	Soil	ND	0.075	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	1,2-Dibromoethane	SW8260C	Soil	ND	0.038	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.15	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	Xylenes (total)	SW8260C	Soil	ND	0.15	10/7/2021	10/13/2021
PB-886-08	PB-886-08-SS01	4.5	5	Anthracene	SW8270D	Soil	0.32	0.1	10/7/2021	10/11/2021
PB-886-09	DUP-21	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	Toluene	SW8260C	Soil	ND	0.0013	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	Lead	SW6010D	Soil	1.87	2.09	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	Xylenes (total)	SW8260C	Soil	0.00207	0.0025	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	10/7/2021	10/12/2021
PB-886-09	DUP-21	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.025	0.0025	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00063	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.024	0.0025	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	Benzene	SW8260C	Soil	ND	0.00063	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	Cumene	SW8260C	Soil	0.00098	0.0013	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	Ethyl Benzene	SW8260C	Soil	0.00033	0.0013	10/7/2021	10/13/2021
PB-886-09	DUP-21	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0025	10/7/2021	10/13/2021
PB-886-09	PB-886-09-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0009	10/7/2021	10/12/2021
PB-886-09	PB-886-09-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	10/7/2021	10/12/2021
PB-886-09	PB-886-09-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-09	PB-886-09-SS01	3	3.5	Lead	SW6010D	Soil	1.76	2.1	10/7/2021	10/13/2021
PB-886-09	PB-886-09-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	10/7/2021	10/12/2021
PB-886-09	PB-886-09-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	10/7/2021	10/12/2021
PB-886-09	PB-886-09-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0009	10/7/2021	10/12/2021
PB-886-09	PB-886-09-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	10/7/2021	10/12/2021
PB-886-09	PB-886-09-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00045	10/7/2021	10/12/2021
PB-886-0										

Table 2 - 012A (PB 886)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-886-10	PB-886-10-SS01	3	3.5	Fluorene	SW8270D	Soil	0.35	0.18	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Pyrene	SW8270D	Soil	0.049	0.11	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.78	0.11	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Lead	SW6010D	Soil	1.97	2.11	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	7/15/2022	7/19/2022
PB-886-10	PB-886-10-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-886-10	PB-886-10-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-886-10	PB-886-10-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0006	7/15/2022	7/19/2022
PB-886-10	PB-886-10-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0014	0.0024	7/15/2022	7/19/2022
PB-886-10	PB-886-10-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-886-10	PB-886-10-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0006	7/15/2022	7/19/2022
PB-886-10	PB-886-10-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.00084	0.0024	7/15/2022	7/19/2022
PB-886-10	PB-886-10-SS01	3	3.5	Anthracene	SW8270D	Soil	0.16	0.11	7/15/2022	7/18/2022
PB-886-10	PB-886-10-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.00173	0.0024	7/15/2022	7/19/2022
PB-886-11	PB-886-11-SS01	3.5	4	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	10/7/2021	10/11/2021
PB-886-11	PB-886-11-SS01	3.5	4	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	10/7/2021	10/11/2021
PB-886-11	PB-886-11-SS01	3.5	4	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	10/7/2021	10/11/2021
PB-886-11	PB-886-11-SS01	3.5	4	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	10/7/2021	10/11/2021
PB-886-11	PB-886-11-SS01	3.5	4	Chrysene	SW8270D	Soil	ND	0.11	10/7/2021	10/11/2021
PB-886-11	PB-886-11-SS01	3.5	4	Fluorene	SW8270D	Soil	ND	0.18	10/7/2021	10/11/2021
PB-886-11	PB-886-11-SS01	3.5	4	Naphthalene	SW8270D	Soil	ND	0.18	10/7/2021	10/11/2021
PB-886-11	PB-886-11-SS01	3.5	4	Pyrene	SW8270D	Soil	ND	0.11	10/7/2021	10/11/2021
PB-886-11	PB-886-11-SS01	3.5	4	Toluene	SW8260C	Soil	ND	0.0012	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	Phenanthrene	SW8270D	Soil	ND	0.11	10/7/2021	10/11/2021
PB-886-11	PB-886-11-SS01	3.5	4	Lead	SW6010D	Soil	11.7	2.14	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	Ethyl Benzene	SW8260C	Soil	ND	0.0012	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	Cumene	SW8260C	Soil	ND	0.0012	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	Benzene	SW8260C	Soil	ND	0.00059	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	1,2-Dibromoethane	SW8260C	Soil	ND	0.00059	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	Xylenes (total)	SW8260C	Soil	ND	0.0024	10/7/2021	10/13/2021
PB-886-11	PB-886-11-SS01	3.5	4	Anthracene	SW8270D	Soil	ND	0.11	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Pyrene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Xylenes (total)	SW8260C	Soil	0.00194	0.0029	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	Fluorene	SW8270D	Soil	0.044	0.19	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Naphthalene	SW8270D	Soil	ND	0.19	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Phenanthrene	SW8270D	Soil	0.12	0.12	10/7/2021	10/11/2021
PB-886-12	PB-886-12-SS01	4	4.5	Lead	SW6010D	Soil	5.66	4.58	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	Toluene	SW8260C	Soil	ND	0.0014	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0011	0.0029	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00072	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0014	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	Benzene	SW8260C	Soil	ND	0.00072	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	Cumene	SW8260C	Soil	ND	0.0014	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	Ethyl Benzene	SW8260C	Soil	ND	0.0014	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0029	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.0014	0.0029	10/7/2021	10/13/2021
PB-886-12	PB-886-12-SS01	4	4.5	Chrysene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-13	PB-886-13-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0011	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-13	PB-886-13-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0043	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0043	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0043	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0011	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0043	7/15/2022	7/19/2022
PB-886-13	PB-886-13-SS01	3	3.5	Lead	SW6010D	Soil	3.04	2.26	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Toluene	SW8260C	Soil	ND	0.0017	7/15/2022	7/20/2022
PB-886-14	DUP-46	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00083	7/15/2022	7/20/2022
PB-886-14	DUP-46	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	DUP-46	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0033	7/15/2022	7/20/2022
PB-886-14	DUP-46	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0033	7/15/2022	7/20/2022
PB-886-14	DUP-46	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0017	7/15/2022	7/20/2022
PB-886-14	DUP-46	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0033	7/15/2022	7/20/2022
PB-886-14	DUP-46	3	3.5	Benzene	SW8260C	Soil	ND	0.00083	7/15/2022	7/20/2022
PB-886-14	DUP-46	3	3.5	Cumene	SW8260C	Soil	ND	0.0017	7/15/2022	7/20/2022
PB-886-14	DUP-46	3	3.5	Ethyl Benzene	SW8260C	So				

Table 2 - 012A (PB 886)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-886-14	PB-886-14-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-14	PB-886-14-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	PB-886-14-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-14	PB-886-14-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	PB-886-14-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-14	PB-886-14-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	PB-886-14-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-14	PB-886-14-SS01	3	3.5	Lead	SW6010D	Soil	2.16	2.18	7/15/2022	7/18/2022
PB-886-14	PB-886-14-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0024	7/15/2022	7/19/2022
PB-886-14	PB-886-14-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-886-14	PB-886-14-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-886-14	PB-886-14-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00061	7/15/2022	7/19/2022
PB-886-14	PB-886-14-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/15/2022	7/19/2022
PB-886-14	PB-886-14-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/15/2022	7/19/2022
PB-886-14	PB-886-14-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00061	7/15/2022	7/19/2022
PB-886-14	PB-886-14-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0024	7/15/2022	7/19/2022
PB-886-14	PB-886-14-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0024	7/15/2022	7/19/2022
PB-886-14	PB-886-14-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0035	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0035	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0035	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0035	7/15/2022	7/19/2022
PB-886-15	PB-886-15-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-15	PB-886-15-SS01	3	3.5	Lead	SW6010D	Soil	2.56	2.2	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-886-16	PB-886-16-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-886-16	PB-886-16-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-16	PB-886-16-SS01	3	3.5	Lead	SW6010D	Soil	1.82	2.13	7/15/2022	7/21/2022
PB-886-16	PB-886-16-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-886-16	PB-886-16-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00043	7/15/2022	7/19/2022
PB-886-16	PB-886-16-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-886-16	PB-886-16-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-886-16	PB-886-16-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00043	7/15/2022	7/19/2022
PB-886-16	PB-886-16-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-886-16	PB-886-16-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00087	7/15/2022	7/19/2022
PB-886-16	PB-886-16-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0017	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.092	0.19	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Fluorene	SW8270D	Soil	0.046	0.19	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.13	0.12	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Lead	SW6010D	Soil	1.8	2.27	7/15/2022	7/21/2022
PB-886-17	PB-886-17-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	Cumene	SW8260C	Soil	0.00012	0.001	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00052	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.00082	0.0021	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00052	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.0025	0.0021	7/15/2022	7/19/2022
PB-886-17	PB-886-17-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-17	PB-886-17-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	7/15/2022	7/19/2022
PB-886-18	PB-886-18-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	0.022	0.11	10/7/2021	10/11/2021
PB-886-18	PB-886-18-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	10/7/2021	10/11/2021
PB-886-18	PB-886-18-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	0.036	0.11	10/7/2021	10/11/2021
PB-886-18	PB-886-18-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	0.027	0.15	10/7/2021	10/11/2021
PB-886-18	PB-886-18-SS01	3	3.5	Chrysene	SW8270D	Soil	0.093	0.11	10/7/2021	10/11/2021
PB-886-18	PB-886-18-SS01	3	3.5	Fluorene	SW8270D	Soil	0.03	0.18	10/7/2021	10/11/2021
PB-886-18	PB-886-18-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.14	0.18	10/7/2021	10/11/2021
PB-886-18	PB-886-18-SS01	3	3.5	Pyrene	SW8270D	Soil	0.11	0.11	10/7/2021	10/11/2021
PB-886-18	PB-886-18-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0011	10/7/2021	10/13/2021
PB-886-18	PB-886-18-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.12	0.11	10/7/2021	10/11/2021
PB-886-18	PB-886-18-SS01	3	3.5	Lead	SW6010D	Soil	1.92	2.1	10/7/2021	10/13/2021
PB-886-18	PB-886-18-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	10/7/2021	10/13/2021
PB-886-18	PB-886-18-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0011	10/7/2021	10/13/2021
PB-886-18	PB-886-18-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0011	10/7/2021	10/13/2021
PB-886-18	PB-886-18-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00057	10/7/2021	10/13/2021
PB-886-18	PB-886-18-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0023	10/7/2021	10/13/2021
PB-886-18	PB-886-18-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	10/7/2021	10/13/2021
PB-886-18	PB-886-18-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00057	10/7/2021	10/13/2021
PB-886-18	PB-886-18-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil</				

Table 2 - 012A (PB 886)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-886-19	PB-886-19-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-19	PB-886-19-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0026	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-19	PB-886-19-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-19	PB-886-19-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-19	PB-886-19-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-19	PB-886-19-SS01	3	3.5	Lead	SW6010D	Soil	2.28	2.24	7/15/2022	7/18/2022
PB-886-19	PB-886-19-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0026	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00066	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00066	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0013	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0026	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0026	7/15/2022	7/20/2022
PB-886-19	PB-886-19-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0012	7/15/2022	7/20/2022
PB-886-20	PB-886-20-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00063	7/15/2022	7/20/2022
PB-886-20	PB-886-20-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-20	PB-886-20-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0025	7/15/2022	7/20/2022
PB-886-20	PB-886-20-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0025	7/15/2022	7/19/2022
PB-886-20	PB-886-20-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0012	7/15/2022	7/20/2022
PB-886-20	PB-886-20-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0025	7/15/2022	7/20/2022
PB-886-20	PB-886-20-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00063	7/15/2022	7/20/2022
PB-886-20	PB-886-20-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0012	7/15/2022	7/20/2022
PB-886-20	PB-886-20-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0012	7/15/2022	7/20/2022
PB-886-20	PB-886-20-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0025	7/15/2022	7/20/2022
PB-886-20	PB-886-20-SS01	3	3.5	Lead	SW6010D	Soil	2.19	2.22	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00089	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00044	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	7/15/2022	7/18/2022
PB-886-21	PB-886-21-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00089	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00044	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.00089	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.00089	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-886-21	PB-886-21-SS01	3	3.5	Lead	SW6010D	Soil	1.82	2.23	7/15/2022	7/21/2022
PB-886-22	PB-886-22-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-22	PB-886-22-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-22	PB-886-22-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.19	7/15/2022	7/18/2022
PB-886-22	PB-886-22-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-22	PB-886-22-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-22	PB-886-22-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-22	PB-886-22-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-22	PB-886-22-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-22	PB-886-22-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-22	PB-886-22-SS01	3	3.5	Lead	SW6010D	Soil	2.06	2.24	7/15/2022	7/21/2022
PB-886-22	PB-886-22-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/15/2022	7/19/2022
PB-886-22	PB-886-22-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.002	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-23	PB-886-23-SS01	3	3.5	Lead	SW6010D	Soil	1.95	2.21	7/15/2022	7/21/2022
PB-886-23	PB-886-23-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.0005	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.0005	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.002	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.002	7/15/2022	7/19/2022
PB-886-23	PB-886-23-SS01	3								

Table 2 - 012A (PB 886)

Sample/Analysis Information (Attachment for Section III.)

Location	Sample ID	Start Depth (ft)	End Depth (ft)	Parameter	Analytical Method	Media	Results (mg/kg)	Detection Limit (mg/kg)	Date Sample Taken	Date Sample Analyzed
PB-886-24	PB-886-24-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.2	10/7/2021	10/11/2021
PB-886-24	PB-886-24-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-24	PB-886-24-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-24	PB-886-24-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.001	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.2	10/7/2021	10/11/2021
PB-886-24	PB-886-24-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00053	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	Lead	SW6010D	Soil	4.51	2.35	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.12	10/7/2021	10/11/2021
PB-886-24	PB-886-24-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0021	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0021	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.001	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0021	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00053	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.001	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.001	10/7/2021	10/13/2021
PB-886-24	PB-886-24-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0021	10/7/2021	10/13/2021
PB-886-25	PB-886-25-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-25	PB-886-25-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-25	PB-886-25-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.18	7/15/2022	7/18/2022
PB-886-25	PB-886-25-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-25	PB-886-25-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-25	PB-886-25-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.15	7/15/2022	7/18/2022
PB-886-25	PB-886-25-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-25	PB-886-25-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-25	PB-886-25-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-25	PB-886-25-SS01	3	3.5	Lead	SW6010D	Soil	1.81	2.18	7/15/2022	7/21/2022
PB-886-25	PB-886-25-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	ND	0.0009	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	Cumene	SW8260C	Soil	ND	0.0009	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00045	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0009	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00045	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	ND	0.0018	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.0009	7/15/2022	7/19/2022
PB-886-25	PB-886-25-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.11	7/15/2022	7/18/2022
PB-886-26	PB-886-26-SS01	3	3.5	Anthracene	SW8270D	Soil	0.034	0.11	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.11	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Fluorene	SW8270D	Soil	0.054	0.18	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Naphthalene	SW8270D	Soil	0.022	0.18	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.025	0.0023	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	Pyrene	SW8270D	Soil	0.045	0.11	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.11	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Phenanthrene	SW8270D	Soil	0.12	0.11	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Lead	SW6010D	Soil	2.15	2.08	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0023	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.0032	0.0011	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	Cumene	SW8260C	Soil	0.0089	0.0011	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	Benzene	SW8260C	Soil	0.00025	0.00057	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	0.14	0.0023	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.0011	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00057	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.17	0.0023	10/7/2021	10/13/2021
PB-886-26	PB-886-26-SS01	3	3.5	Chrysene	SW8270D	Soil	0.031	0.11	10/7/2021	10/11/2021
PB-886-26	PB-886-26-SS01	3	3.5	Toluene	SW8260C	Soil	0.0012	0.0011	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	Benzo(a)anthracene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Benzo(a)pyrene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Benzo(b)fluoranthene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Benzo(g,h,i)perylene	SW8270D	Soil	ND	0.14	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Chrysene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Fluorene	SW8270D	Soil	ND	0.17	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Anthracene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Phenanthrene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	1,3,5-Trimethylbenzene	SW8260C	Soil	ND	0.12	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	Naphthalene	SW8270D	Soil	ND	0.17	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Xylenes (total)	SW8260C	Soil	0.00107	0.0019	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Toluene	SW8260C	Soil	ND	0.00095	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	Methyl tert-butyl ether	SW8260C	Soil	ND	0.0019	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	Ethyl Benzene	SW8260C	Soil	0.00018	0.00095	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	Benzene	SW8260C	Soil	ND	0.00047	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	1,2-Dichloroethane	SW8260C	Soil	ND	0.00095	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	1,2-Dibromoethane	SW8260C	Soil	ND	0.00047	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	1,2,4-Trimethylbenzene	SW8260C	Soil	0.051	0.0019	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	Lead	SW6010D	Soil	2.28	2.04	10/7/2021	10/13/2021
PB-886-27	PB-886-27-SS01	3	3.5	Pyrene	SW8270D	Soil	ND	0.1	10/7/2021	10/11/2021
PB-886-27	PB-886-27-SS01	3	3.5	Cumene	SW8260C	Soil	0.00021	0.00095	10/7/2021	10/13/2021

Notes:

SS -- Soil Sample.

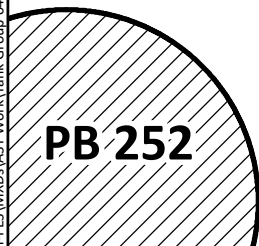
DUP-21 is a field duplicate associated with sample PB-886-09-SS01.

DUP-46 is a field duplicate associated with sample PB-886-14-SS01.

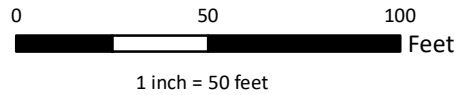
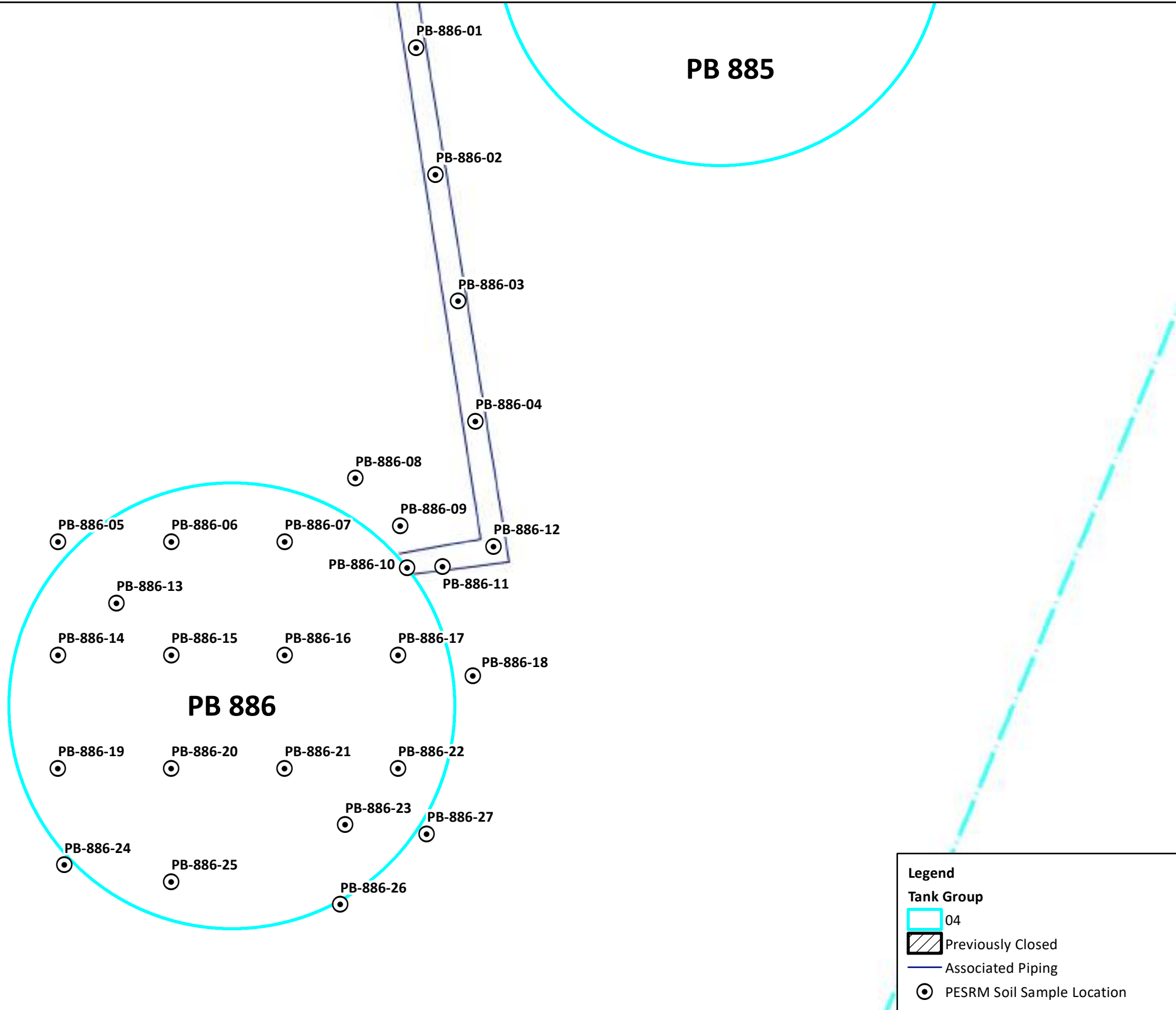
File: N:\GIS\Prj\PO44_001_PESRM-PES\WYD\AST\Work\Tank Group 04\For AST Closure Report\Figure 2 - 012A (PB 886).mxd, 12/30/2022, Created by: J.D. Checked by: Initial, Coordinate System: NAD_1983_StatePlane_Pennsylvania_South_FPS_3702_Feet



PB 251



PB 252



SAFETY FIRST 	CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC	Site Location and Sampling Map 012A (PB 886)
	PROJECT: Aboveground Storage Tank Closure	
PROJECT NUMBER: P044.001.002	Figure 2	



Photograph 1:
View of Tank 012A (PB 886) prior to demolition.



Photograph 2:
View of Tank 012A (PB 886) prior to demolition.



Photograph 3:

View of the cleaning of Tank 012A (PB 886) prior to demolition.

Product Movement and Waste Disposal Documentation (Tank 012A)



PES Project Load Ticket

#5120103

Load Ticket: 14359

Date: 08-17-21

Sold to: Allegany **Scrap**
Location: W160 Tank
Carrier: Allegany

Non-Haz / ACM / Special Waste

Activity Location: _____

Steel / Ferrous

- No. 1 P+S
- No. 2 Heavy Melt
- Cast Iron
- Mixed
- Pipe
- Light Iron
- Re-Bar
- Other: Tank Pipe

Non-Ferrous

- Insulated Copper Wire
- No. 1 Copper Wire
- Brass
- Aluminum
- Stainless, Grade: _____
- Other Alloy, Grade: _____
- Mixed
- Other: _____

Condition

- Prepared
- Unprepared
- Green Waste
- Concrete
- Masonry
- Mixed Masonry
- Wood Only
- Demo Debris (C&D)
- Dirt / fill
- Sand fill
- Crushed Stone
- Other: _____

Waste Stream

- C&D Demolition Debris
- Non-Friable ACM
- Friable ACM
- PB WWTP Sludge
- GP WWTP Sludge
- Characteristic Haz Waste (flammable D001, corrosive D002, reactive D003, toxicity D004-D043)
- Process Haz Waste
- Demo Debris (C&D)
- Non-Haz Waste (Solid)
- Non-Haz Waste (Liquid)
- PCB (Non-TSCA)
- PCB (TSCA)

Disposal Facility: _____

Carrier: _____

Truck #: _____

Container #: _____

Manifest #: _____

Profile / Approval #: _____

Scale Info

Scale Ticket #: _____

Gross Weight: _____

Tare weight: _____

Net weight: _____

Net Kilogram Conversion (PCB Only): _____

Scale Ticket #: _____

Gross Weight: 74560 lbs

Tare Weight: 42280 lbs

Net Weight: 32280 lbs

NorthStar Rep. Signature: [Signature]

Received By: [Signature]

NorthStar Rep. Signature: _____

HILCO REDEVELOPEMENT PARTNERS
3144 W. PASSYUNK AVE

Ticket #: 20029383
Date: 08/17/2021 7:50 AM
Phone: () -
Fax: () -

PHILADELPHIA PA, 19145

Customer: HILCO
HILCO

Order Number: 001
SCRAP REMOVAL
Tons: 47396.851
Loads: 3230

DT328-1109 - TRACTOR 1109 TRAILER DT328
CARLAD - CARLA DAVILA

Remarks: SCRAP REMOVAL

Signature: _____

Material	Quantity	Price	Material \$	Delivery \$	Misc \$	Tax \$	Line Total \$
SCRAP	16 14 ln						

Weight Information

Material	Gross	Tare	Net
SCRAP	74580.00	42280.00	32280.00

14359

THE MONSTER

by
MILITARY



Product Movement and Waste Disposal Documentation (Tank Group 04)

Date	From Tank #	Product Qty. (gal)	Transferred To Tank #	Product	Disposition / Volume			
191					191			
6/7/2021	191	2,800	843	Crude Oil	Bulk Sale of Crude Oil	Bulk Saleable product (gal) 98,300		
6/15/2021	191	5,000	843	Crude Oil				
6/16/2021	191	5,000	843	Crude Oil				
6/17/2021	191	3,000	843	Crude Oil				
6/17/2021	191	6,000	843	Crude Oil				
6/24/2021	191	3,000	843	Crude Oil				
6/25/2021	191	2,800	191	Crude Oil				
6/25/2021	191	3,000	843	Crude Oil				
6/25/2021	191	2,800	843	Crude Oil				
6/25/2021	191	2,800	843	Crude Oil				
6/29/2021	191	2,800	843	Crude Oil				
6/30/2021	191	2,800	843	Crude Oil				
6/30/2021	191	2,800	843	Crude Oil				
7/1/2021	191	2,800	843	Crude Oil				
7/1/2021	191	3,000	843	Crude Oil				
7/1/2021	191	3000	843	Crude Oil				
7/1/2021	191	3200	843	Crude Oil				
7/6/2021	191	2800	843	Crude Oil				
7/6/2021	191	500	843	Crude Oil				
7/9/2021	191	2800	843	Crude Oil				
7/13/2021	191	2800	843	Crude Oil				
7/13/2021	191	3600	843	Crude Oil				
7/15/2021	191	2800	843	Crude Oil				
7/15/2021	191	2800	843	Crude Oil				
7/15/2021	191	2800	843	Crude Oil				
7/15/2021	191	2800	843	Crude Oil				
7/15/2021	191	18000	843	Crude Oil				
7/16/2021	191	2800	843	Crude Oil / Water				
7/16/2021	191	2800	843	Crude Oil / Water				
7/16/2021	191	2800	843	Crude Oil / Water				
7/16/2021	191	2800	843	Crude Oil / Water				
7/16/2021	191	2800	843	Crude Oil / Water				
7/20/2021	191	2800	843	Crude Oil / Water				
7/20/2021	191	2800	843	Crude Oil / Water				
7/20/2021	191	1500	843	Crude Oil / Water				
7/20/2021	191	2800	843	Crude Oil / Water				
7/20/2021	191	8000	843	Crude Oil / Water				
7/20/2021	191	1500	843	Crude Oil / Water				
7/20/2021	881	2800	843	Crude Oil / Water				
7/21/2021	191	2800	843	Crude Oil / Water				
7/21/2021	191	2800	843	Crude Oil / Water				
7/21/2021	191	2800	843	Crude Oil / Water				
7/21/2021	191	3000	843	Crude Oil / Water				
7/21/2021	191	14000	843	Crude Oil / Water				
7/21/2021	191	600	843	Crude Oil / Water				
7/22/2021	191	2800	843	Crude Oil / Water				
7/22/2021	191	2800	843	Crude Oil / Water				
7/22/2021	191	2000	843	Crude Oil / Water				
7/23/2021	191	2800	843	Crude Oil / Water				
7/23/2021	191	2800	843	Crude Oil / Water				
7/23/2021	191	2800	843	Crude Oil / Water				
7/23/2021	191	2800	843	Crude Oil / Water				
7/23/2021	191	2800	843	Crude Oil / Water				
7/23/2021	191	2800	843	Crude Oil / Water				
7/23/2021	191	1100	843	Crude Oil / Water				
7/26/2021	191	2800	843	Crude Oil / Water				
7/26/2021	191	2800	843	Crude Oil / Water				
7/26/2021	191	2800	843	Crude Oil / Water				
7/26/2021	191	15000	843	Crude Oil / Water				
7/27/2021	191	2800	843	Crude Oil / Water				
7/27/2021	191	2800	843	Crude Oil / Water				
7/27/2021	191	13000	843	Crude Oil / Water				
7/27/2021	191	2800	843	Crude Oil / Water				
7/27/2021	191	2800	843	Crude Oil / Water				
7/27/2021	191	13000	843	Crude Oil / Water				
7/28/2021	191	2800	843	Crude Oil / Water				
7/28/2021	191	6000	843	Crude Oil / Water				
9/10/2021	191	100	272	Line Flush Crude Oil/Water				
9/13/2021	191	3000	272	Line Flush Crude Oil/Water				
10/13/2022	191	1750	272	Line Flush Crude Oil/Water				
10/14/2022	191	750	272	Line Flush Crude Oil/Water				
10/14/2022	191	3000	272	Line Flush Crude Oil/Water				
10/15/2022	191	750	272	Line Flush Crude Oil/Water				
10/18/2022	191	1500	272	Line Flush Crude Oil/Water				
10/18/2022	191	600	272	Line Flush Crude Oil/Water				
881					881			
7/22/2021	881	1800	273	Crude Oil	Bulk Sale of Crude Oil	Volume (gal)		
11/22/2021	881	15,000	273	Crude Oil		Bulk Sale of Crude Oil / WWTP	31,800	
11/24/2021	881	3,000	273	Crude Oil			Crude Oil / Water Volume (gal) 3,120 / 30,000	
11/29/2021	881	12,000	273	Crude Oil				
11/30/2021	881	18,000	273	Crude Oil/Water				
12/2/2021	881	9,000	273	Crude Oil/Water				
12/2/2021	881	500	273	Crude Oil/Water				
12/3/2021	881	300	273	Crude Oil/Water				
12/6/2021	881	10,000	273	Crude Oil/Water				
12/7/2021	881	5,200	273	Crude Oil/Water				
12/8/2021	881	6,000	273	Crude Oil/Water				
12/9/2021	881	4,000	273	Crude Oil/Water				
12/10/2021	881	3,000	273	Crude Oil/Water				
12/13/2021	881	700	273	Crude Oil/Water				
12/14/2021	881	1,500	273	Crude Oil/Water				

12/17/2021	881	120	273	Crude Oil/Water			
885					885		
6/25/2021	885	3,000	843	Crude Oil/Water	Bulk Sale of Crude Oil / WWTP	Crude Oil / Water Volume (gal)	
6/25/2021	885	1,500	843	Crude Oil/Water		18,015 / 33,455	
8/26/2021	Tank 885	28,000	273	Crude Oil/Water			
8/27/2021	Tank 885	3,000	273	Crude Oil/Water			
9/2/2021	Tank 885	9,050	273	Crude Oil/Water			
9/2/2021	Tank 885	420	273	Crude Oil/Water			
9/9/2021	Tank 885	1,500	273	Crude Oil/Water			
9/9/2021	Tank 885	5,000	273	Crude Oil/Water			
886					886		
2/13/2021	Tank 886	311,100	843	Crude Oil	Bulk Sale of Crude Oil	Volume (gal)	
2/11/2021	Tank 886	91,000	843	Crude Oil		815,500	
2/13/2021	Tank 886	70,200	843	Crude Oil			
2/16/2021	Tank 886	176,100	843	Crude oil			
2/16/2021	Tank 886	90,300	843	Crude Oil/Water			
2/16/2021	Tank 886	76,800	843	Crude Oil/Water			
3/3/2021	Tank 886	10,700	843	Crude Oil/Water	Bulk Sale of Crude Oil / WWTP		Crude Oil / Water Volume (gal)
3/12/2021	Tank 886	2,400	843	Crude Oil/Water		10,630 / 42520	
5/17/2021	Tank 886	5,500	843	Crude Oil/Water			
6/25/2021	Tank 886	1,800	843	Crude Oil/Water			
6/30/2021	Tank 886	900	843	Crude Oil/Water			
7/1/2021	Tank 886	4,000	843	Crude Oil/Water			
7/9/2021	Line by Tank 886	2,600	843	Crude Oil/Water			
7/12/2021	TF 4 / 886 Tank Line Flush	3,750	843	Crude Oil/Water			
7/12/2021	TF 4 / 886 Tank Line Flush	6,000	843	Crude Oil/Water			
7/13/2021	TF 4 / 886 Tank Line Flush	4,000	843	Crude Oil/Water			
7/14/2021	TF 4 / 886 Tank Line Flush	2,000	843	Crude Oil/Water			
7/14/2021	TF 4 / 886 Tank Line Flush	3,000	843	Crude Oil/Water			
8/26/2021	TF 4 / 886 Tank Line Flush	5,000	272	Crude Oil/Water			
3/8/2022	Tank 886	1,500	273	Crude Oil/Water			
826							826
3/10/2021	826	63,000	843	Crude Oil	Bulk sale of Crude Oil		Volume (gal)
3/11/2021	826	27,000	843	Crude Oil		90,000	
3/12/2021	826	3,000	843	Crude Oil / Water	Bulk Sale of Crude Oil / WWTP		17,000 / 95,400
2/22/2022	826	2,800	227	Crude Oil/Water			
2/23/2022	826	2,800	227	Crude Oil/Water			
2/24/2022	826	600	227	Crude Oil/Water			
2/25/2022	826	3,000	227	Crude Oil/Water			
2/28/2022	826	3,000	272	Crude Oil/Water			
3/4/2022	826	6,000	227	Crude Oil/Water			
3/7/2022	826	4,000	227	Crude Oil/Water			
3/8/2022	826	4,000	227	Crude Oil/Water			
3/9/2022	826	2,700	227	Crude Oil/Water			
3/9/2022	826	3,000	227	Crude Oil/Water			
3/11/2022	826	6,000	227	Crude Oil/Water			
3/14/2022	826	6,000	227	Crude Oil/Water			
3/15/2022	826	6,000	227	Crude Oil/Water			
3/16/2022	826	6,000	227	Crude Oil/Water			
3/17/2022	826	6,000	227	Crude Oil/Water			
3/17/2022	826	6,000	227	Crude Oil/Water			
3/22/2022	826	6,000	227	Crude Oil/Water			
3/22/2022	826	6,000	227	Crude Oil/Water			
3/23/2022	826	6,000	227	Crude Oil/Water			
3/25/2022	826	6,000	227	Crude Oil/Water			
3/29/2022	826	6,000	227	Crude Oil/Water			
3/30/2022	826	6,000	227	Crude Oil/Water			
4/1/2022	826	3,000	227	Crude Oil/Water			
4/1/2022	826	1,500	227	Crude Oil/Water			
4/4/2022	826	1,000	227	Crude Oil/Water			
840					840		
2/16/2021	840	900	273	Crude Oil / Water	Bulk Sale of Crude Oil / WWTP	Crude Oil / Water Volume (gal)	
5/24/2021	840	1,500	273	Crude Oil / Water		100 / 5,800	
9/16/2021	840	1,500	273	Crude Oil / Water			
2/28/2022	840	2,000	273	Crude Oil / Water			
841					841		
2/19/2021	841	4,500	843	Crude Oil	Bulk sale of Crude Oil	Crude Oil / Water Volume (gal)	
2/24/2022	841	3,200	273	Crude Oil		18,200	
3/2/2022	841	10,500	273	Crude Oil			
847					847		
2/27/2021	847	3,500	273	Crude Oil / Water	Bulk Sale of Crude Oil / WWTP	Crude Oil / Water Volume (gal)	
3/5/2021	847	6,400	843	Crude Oil / Water		900 / 17,100	
3/5/2021	847	2,400	273	Crude Oil / Water			
3/10/2021	847	900	843	Crude Oil / Water			
3/8/2021	847	3,500	273	Crude Oil / Water			
3/10/2021	847	1,200	273	Crude Oil/Water			
9/10/2021	847	100	273	Crude Oil / Water			
883					883		
4/1/2021	883	2,100	843	Crude Oil/Water	Bulk Sale of Crude Oil / WWTP	Volume (gal)	
4/19/2021	883	10,000	826	Crude Oil		18,000	
4/21/2021	883	19,200	826	Crude Oil			
4/22/2021	883	16,000	826	Crude Oil			
4/23/2021	883	4,800	826	Crude Oil			
4/24/2021	883	9,600	826	Crude Oil			
4/25/2021	883	28,800	826	Crude Oil			
4/26/2021	883	20,800	826	Crude Oil			
4/27/2021	883	12,800	826	Crude Oil			
4/28/2021	883	4,800	826	Crude Oil			
4/29/2021	883	8,000	826	Crude Oil			
5/1/2021	883	35,200	826	Crude Oil			
5/2/2021	883	38,400	826	Crude Oil			

5/3/2021	883	19,200	826	Crude Oil				
5/6/2021	883	21,000	826	Crude Oil				
5/7/2021	883	15,000	826	Crude Oil				
5/10/2021	883	21,000	826	Crude Oil				
5/12/2021	883	9,000	826	Crude Oil/Water		Crude Oil / Water Volume (gal)		
5/13/2021	883	5,600	826	Crude Oil/Water				
5/14/2021	883	1,500	826	Crude Oil/Water				
5/24/2021	883	3,000	826	Crude Oil/Water				
8/3/2021	883 Line Flush	3,900	272	Crude Oil/Water	Bulk Sale of Crude Oil / WWTP	2,300 / 38,200		
8/3/2021	883 Line Flush	3,900	272	Crude Oil/Water				
8/3/2021	883 Line Flush	2,900	272	Crude Oil/Water				
8/3/2021	883 Line Flush	3,900	272	Crude Oil/Water				
8/3/2021	883 Line Flush	3,900	272	Crude Oil/Water				
8/3/2021	883 Line Flush	2,900	272	Crude Oil/Water				
8/3/2021	883 Line Flush	2,900	272	Crude Oil/Water				
884					884			
4/30/2021	884	3,000	843	Crude Oil/Water		Crude Oil / Water Volume (gal)		
5/19/2021	884	2,500	843	Crude Oil/Water				
5/21/2021	884	1,200	843	Crude Oil/Water				
5/24/2021	884	1,000	843	Crude Oil/Water				
5/25/2021	884	3,000	843	Crude Oil/Water				
5/26/2021	884	1,600	843	Crude Oil/Water				
5/27/2021	884	1,600	843	Crude Oil/Water				
5/28/2021	884	1,600	843	Crude Oil/Water				
6/1/2021	884	3,000	843	Crude Oil/Water				
6/2/2021	884	2,600	843	Crude Oil/Water				
6/3/2021	884	2,800	843	Crude Oil/Water				
6/7/2021	884	2,600	843	Crude Oil/Water	Bulk Sale of Crude Oil / WWTP	3,450 / 46,700		
6/8/2021	884	1,900	843	Crude Oil/Water				
6/9/2021	884	4,900	843	Crude Oil/Water				
6/10/2021	884	1,950	843	Crude Oil/Water				
6/25/2021	884	1,800	843	Crude Oil/Water				
6/28/2021	884 Line Flush	2,100	843	Crude Oil/Water				
6/28/2021	884 Line Flush	3,000	843	Crude Oil/Water				
6/30/2021	884 Line Flush	3,000	843	Crude Oil/Water				
7/2/2021	884 Line Flush	1,500	843	Crude Oil/Water				
7/7/2021	884 Line Flush	1,500	843	Crude Oil/Water				
9/17/2021	884 Line Flush	2,000	843	Crude Oil/Water				
843							843	
3/10/2021	843	3,200	273	Crude Oil / Water				Crude Oil / Water Volume (gal)
3/19/2021	843	5,000	273	Crude Oil / Water				
4/7/2021	843	5,000	273	Crude Oil / Water	Bulk Sale of Crude Oil / WWTP	2,779 / 36921		
4/15/2021	843	12,000	273	Crude Oil / Water				
9/23/2021	843	5,500	227	Crude Oil / Water				
9/24/2021	843 line flush	9,000	272	Crude Oil / Water				
848							848	
						Crude Oil / Water Volume (gal)		
6/29/2021	Tank 848	3,000	272	Water/Crude Oil	Bulk Sale of Crude Oil / WWTP	900 / 2100		

40,500

Date	From Tank #	Product Qty. (gal)	Transferred To Tank #	Product
885				
6/25/2021	885	3,000	843	Oil/Water Mixed
6/25/2021	885	1,500	843	Oil/Water
8/26/2021	Tank 885	28,000	Frak Tank	Water/Foam
8/27/2021	Tank 885	3,000	Frak Tank	Water/Foam
9/2/2021	Tank 885	9,050	Wash Pad	NA
9/2/2021	Tank 885	420	Wash Pad	Water
9/9/2021	Tank 885	1,500	Wash Pad	Oily/Water
9/9/2021	Tank 885	5,000	Wash Pad	Rain Water
9/9/2021	Tank 885	1,500	NA	Oily Water
9/10/2021	Tank 885	250	NA	Heavy Sludge
9/13/2021	Tank 885	1,000	NA	Water/Sludge
9/14/2021	Tank 885	2,000	NA	Oil/Sludge/Water
886				
2/13/2021	Tank 886	311,100	Tank 843	Water and Crude
2/11/2021	Tank 886	91,000	Tank 843	Crude
2/13/2021	Tank 886	70,200	Tank 843	Oil/Water
2/16/2021	Tank 886	176,100	Tank 843	Oil/Water
2/16/2021	Tank 886	90,300	Tank 843	Oil/Water
2/16/2021	Tank 886	76,800	Tank 843	Oil
3/3/2021	Tank 886	10,700	Tank 843	Crude
3/12/2021	Tank 886	2,400	Tank 843	Oil/Water
5/17/2021	Tank 886	5,500	Tank 843	Line Flush
6/25/2021	Tank 886	1,800	Tank 843	Crude/Water
6/30/2021	Tank 886	900	Tank 843	Liquid
7/1/2021	Tank 886	4,000	Tank 843	Flush Line
7/9/2021	Line by Tank 886	2,600	Tank 843	Crude/Water
7/12/2021	TF 4 / 886 Tank Lines	3,750	Tank 843	Flush
7/12/2021	Tank 886	6,000	Tank 843	Water/Crude
7/13/2021	Tank 886	4,000	Tank 843	Oil/Water
7/14/2021	TF 4 / 886 Tank Lines	2,000	Tank 843	Flush
7/14/2021	Tank 886	3,000	Tank 843	Oil/Water
8/26/2021	Tank 886	5,000	Tank 272	Diesel/Water
3/8/2022	Tank 886	1,500	Tank 273	Liquid
826				
3/10/2021	Tank 826	3,000	Tank 843	Crude
3/11/2021	Tank 826	600	Pump House 15	Oil/Water
3/12/2021	Tank 826	3,000	Tank 843	Crude
2/22/2022	Tank 826	2,800	Tank 227	Oil/Sludge/Crude
2/23/2022	Tank 826	2,800	Tank 227	Oil/Sludge
2/24/2022	Tank 826	63,000	Tank 227	Oil/Sludge
2/25/2022	Tank 826	3,000	Tank 227	Oil
2/28/2022	Tank 826	27,000	Tank 272	Heavy Oil
3/4/2022	Tank 826	6,000	Tank 227	Oil Recovery
3/7/2022	Tank 826	4,000	Tank 227	Heavy Oil
3/8/2022	Tank 826	4,000	Tank 227	Heavy Oil
3/9/2022	Tank 826	2,700	Tank 227	Heavy Oil
3/9/2022	Tank 826	3,000	Tank 227	Heavy Oil
3/11/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/14/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/15/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/16/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/17/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/17/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/22/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/22/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/23/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/25/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/29/2022	Tank 826	6,000	Tank 227	Heavy Oil
3/30/2022	Tank 826	6,000	Tank 227	Heavy Oil
4/1/2022	Tank 826	3,000	Tank 227	Heavy Oil
4/1/2022	Tank 826	1,500	Tank 227	Crude Oil

4/4/2022	Tank 826	1,000	Tank 227	Crude Oil
840				
2/16/2021	Tank 840	900	Blender	Crude/ Gas
5/24/2021	Tank 840	1,500	Pump House 15	Produt
9/16/2021	Tank 840	1,500	Wash Pad	Waste Water
2/28/2022	Tank 840	2,000	Tank 273	Water/Oil
841				
2/19/2021	841	4,500	843 / Pump House 15	Crude
2/24/2022	Tank 841	3,200	Tank 273	Liquid
3/2/2022	Tank 841	10,500	Tank 273	Heavy Oil
847				
2/27/2021	Tank 847	3,500	Tank 843	Oil Water Mix
3/5/2021	Tank 847	6,400	Tank 843	Crude
3/5/2021	Tank 847	2,400	Tank 843	Water/Crude
3/10/2021	Tank 847	900	Tank 843	Oil
3/8/2021	Tank 847	3,500	Tank 843	Crude/wash Water
3/10/2021	Tank 847	1,200	Tank 843	Oil/Water
9/10/2021	Tank 847	100	Tank 272	Water and Gas
884				
4/30/2021	Tank 884	3,000	Pump House 15	Fuel and Water
5/19/2021	Tank 884	2,500	Tank 843	Line Flush
5/21/2021	Tank 36 & 884	1,200	Tank 843	Flush Water
5/24/2021	Tank 884	1,000	Tank 843	Oil Water
5/25/2021	Tank 884	3,000	Tank 843	Oil Water
5/26/2021	Tank 884	1,600	Tank 843	Oil/Water
5/27/2021	Tank 884	1,600	Tank 843	Oil/Water
5/28/2021	Tank 884	1,600	Tank 843	Oil/Water
6/1/2021	Tank 884	3,000	Tank 843	Oil/Water
6/2/2021	Tank 884	2,600	Tank 843	Oil
6/3/2021	Tank 884	2,800	Tank 843	Oil/Water
6/7/2021	Tank 191 & 884	2,600	Tank 843	Flush Water
6/8/2021	Tank 884	1,900	Tank 843	Flush Water / Crude
6/9/2021	Tank 884	4,900	Tank 843	Crude/Water
6/10/2021	Tank 884	1,950	Tank 843	Oil/Water Mixed
6/25/2021	Tank 884	1,800	Tank 843	Oil/Water
6/28/2021	Pipw Line Near 884	2,100	Tank 843	Oil/Water
6/28/2021	Tank 884 & 885	3,000	Tank 843	Crude/Water
6/30/2021	Tank 884	3,000	Tank 843	Water/Oil
7/2/2021	Tank 884	1,500	Tank 843	Oil/Water
7/7/2021	Tank 884	1,500	Tank 843	Oil/Water
9/17/2021	Tank 884	2,000	Tank 272	Oily Water
5/18/2021	Tank 884	-	843	Flush
9/15/2021	Tank 884	0	Epic Cans	Sludge/Oil/Water
9/15/2021	Tank 884	0	Epic Cans	Sludge/Oil/Water
843				
3/10/2021	Tank 843	3,200	Tank 843	cutter
3/19/2021	Tank 843	5,000	Blender	Diesel/Water
4/7/2021	Tank 843	5,000	Tank 843	Frac Tank
4/15/2021	Tank 843	12,000	Tank 843	Transmix
9/23/2021	Tank 843	5,500	Tank 227	Oil
9/24/2021	Tank 843	9,000	Tank 272	Oil/Flush
848				
6/29/2021	Tank 484	3,000	Tank 219	Water/Oil

PADEP Reg. #	PES Tank ID	Managed as HSM	HSM (tons)
011A	881		
012A	886		
040A	191	Shipment- # 19 thru #20	619.66
049A	826	Shipment - # 28 thru #33	1,793.50
053A	840		
054A	841		
055A	847		
056A	882		
057A	883	Shipments - # 10 and #11	408.69
058A	884		
059A	885		
086A	843	Shipment - # 25 thru #27	1,289.04
088A	848		

Note:

1. All sludges from Tank Group 04 were stabilized for transport and loaded into intermodal containers and then loaded onto rail cars. Each rail car was loaded with 6 intermodal containers of stabilized sludge, placarded, a BOL and way bill completed for each container and then transported by rail to Waste Management's facility in Lake Charles Louisiana for recovery and disposal. Documentation on file & available upon request.

152315

UN3111-001

Bill of Lading (Page 1 of 2)

DOCUMENT# 91119-2A

764369

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 588-2168

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PAD 048791 098
 City/State/Zip: PHILADELPHIA, PA 19148
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

WRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.46(i) 1241

Labels 26416

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WT
X	1	RO, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. & ILL (BENZENE) PROFILE: 969843LA IM CONTAINER# EPIU225086 RAIL CAR# EPIX81118 ENC# 171 1038	CM	24.30	T

RECEIVED subject to the classification and terms in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (contents and condition of packages unknown), sealed, counted and destined as indicated above which said carrier (the word carrier being understood through this document as meaning any person or corporation in possession of the property under the contract) agrees to carry in its usual place of delivery as said destination. If on its route, whenever to deliver to another carrier on the route or said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in or any said property, that every transfer to be performed hereunder shall be subject to all the terms and conditions of the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading forms and conditions to the governing classification and the applicable forms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 11/18/21
 Per: *Luis Castro* Date: 11/18/21

Mark with "X" in "RO" if this article is designated Hazardous Materials Substance as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bill of Lading 172.201(a)(7) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certificate statement provided in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Carmie Ombodaux* Date: 12-14-21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91119-2A

TO
Consignee: CHEMICAL WASTE MANAGEMENT INC.
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70965
Phone: (337) 683-2169

FROM
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 048781 098
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (440) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. 1A0000147272 (800) 336-2169	
Acknowledgment of Receipt	
Per: <i>David Gray</i>	Date: <i>12/14/21</i>

0770 201 58276

0770 201 58276

83240 G
34160 T
49080 N

2959

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 70612007
WEIGHED BY _____

65368 0011M-2K5

204303

Bill of Lading (Page 1 of 2)

DOCUMENT # 91119-2B

To

Consignee: CHEMICAL WASTE MANAGEMENT
 INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR LA 70685
 Phone: (337) 893-2100

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 090
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1824

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.4(h) 1241

Ticket Stamp

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WT
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 6, III (BENZENE) PROFILE 5099481A	GM	24.40	T
		1M CONTAINER# EPIU225159 RAIL CAR# EPIX91119			
		ERG# 174 H030			

RECEIVED subject to the demurrage and tariffs in effect on the date of the issue of this Bill of Lading, the property described herein in separate goods bills, except as noted (contents and condition of packages unknown), marked, sealed and certified as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the destination of delivery as an obligation. It on its part, otherwise to deliver to another carrier or carriers to said destination if mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in it or any said property, that every contract to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that its is in fact in full compliance with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CBX Railroad Corp
 Per: [Signature] Date: 11/18/21
 Per: Luis Castro Date: 11/18/21

Mark with "X" on 100% of applicable packages hazardous materials as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(4)(B) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from this requirement is provided to the Regulator for a particular material.

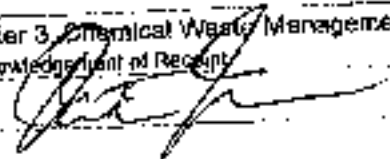
Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Carrie Ambodean Date: 12/8-21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91119-2B

TO
Consignee: CHEMICAL WASTE MANAGEMENT
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70866
Phone: (337) 503-2168

FROM
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 040791 090
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company
Acknowledgement of Receipt
Per: _____ Date: _____
Carrier 3: Chemical Waste Management, Inc.
Acknowledgement of Receipt
Per:  Date: 12/1/17
LA0000147272 (800) 336-2169

C. G.

83580 G
34120 T
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4972

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

10/1/88

RECEIVING TICKET # _____
WEIGHED BY _____

Bill of Lading (Page 1 of 2)

DOCUMENT # 91119-2C

764357

Consignee: CHEMICAL WASTE MANAGEMENT
 INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70966
 Phone: (337) 583-2108

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3141 PASSYUNKAVE
 EPA ID: PAD 040701 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.101 1241
 Tabot Solis

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Units
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) PROFILE 060943LA IM CONTAINER# EPIU225256 RAIL CAR# EPIX91119 ERG# 171 HCBP	GM	24.30	T

RECEIVED (Subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. It is its duty, and it shall be its duty, to deliver to another carrier on the route to said destination, if it actually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in it as if it were its property, that every service to be performed thereunder shall be subject to the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 11/19/21
 Per: Luis Castro Date: 11/19/21

Mark with "X" or "RQ" if applicable. No hazardous materials. Hazardous materials as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials per 49 CFR 172.201(a)(3) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(c) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of material's
 Per: *[Signature]* Date: 12-13-21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81118-20

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70088
Phone: (337) 683-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASEYUNCAVE
EPA ID: PAD 048791 080
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (484) 228-1524

Carrier 2: BNSF Railway Company
Acknowledgement of Receipt
Per: _____ Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2180
Acknowledgement of Receipt
Per: *Joseph [Signature]* Date: *12/13/2024*

AK 114

12

81380 G
32380 T
49000 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # AK 114
WEIGHED BY _____

W20008

W21114-28

7641358

Bill of Lading (Page 1 of 2)

DOCUMENT# 01119-213

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT
 INC
 Street: 7176 JOHN GRANSON ROAD
 EPA ID: LA0006777201
 City/State/Zip: SULPHUR LA 70885
 Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 646781 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.46(a) 12A1

SHIPPER'S INSTRUCTIONS

Blank area for shipper's instructions.

Trailer 56419

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIM. MARKS & EXCEPTIONS	Type	Volume	WT
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B. H (BENZENE) PROFILE: B59843LA IM CONTAINER# EPIU225105 RAIL CARN# EPIX91119	CM	24.30	T
		ERG# 171 H039			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, packaged and described as indicated above which said carrier (the war, carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry on its usual place of delivery or to destination. If or as usual, otherwise to deliver to another owner on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time indicated in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the applicable tariffs and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: *11/17/21* Per: *Luis Castro* Date: *11/18/21*

Mark with "X" or "RD" (for "radioactive") to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an option provided for identifying hazardous materials on Bills of Lading 172.201(a)(1) (E) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification is not precluded in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading (less empty, unless a specific exception from the requirement is provided in the Regulation for a particular class).

Designated Consignee: Chemical Waste Management, Inc. Certification of receipt of materials
 Per: *Carrie Ambold* Date: *12-13-21*

7041358

Bill of Lading (Page 1 of 2)

DOCUMENT# 91119-2D

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT
 INC.
 Street: 7470 JOHN RHANNON ROAD
 EPA ID: LADDC077201
 City/State/Zip: SULPHUR LA 70685
 Phone: (337) 589-2168

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 040701 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (484) 228-1524

ADDITIONAL INFORMATION

VAC TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.4(a)(124)

SHIPPER INSTRUCTIONS

Ticket 56419

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNIT
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (BENZENE) PROFITE: W988431A IN CONTAINER# EPIU225105 RAIL CAR# EPIX91118 ERG# 171 H039	CM	24.30	T

RECEIVER: subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, counted and defined as indicated above which said carrier files with careful being understood through this contract as warranting any person or corporation in possession of the property under the authority agrees to carry to its usual place of delivery as said destination. If on its route, it chooses to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in any any said property, that every service to be performed (unloading, stow, tie, etc.) in all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 11/17/21
 Per: *Luis Castro* Date: 11/18/21

Mark with "X" or "NO" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations covering the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading (49 CFR 171.201(a)(1) (i) or Title 49 Code of Federal Regulations, also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from this requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc. Certification of receipt of materials
 Per: *Carrie Ambold* Date: 12-13-21

83100 G
34500 T
48900 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7061351

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

DOCUMENT # 01119-2E

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR, LA 70665
Phone: (337) 583-2168

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD-048781 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
DEFINITION OF SOLID WASTE UNDER 40CFR
261.111 12-1

SHIPPER'S INSTRUCTIONS

Labels 56420

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Weight	Volume	U.S. TONS
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (BENZENE) PROFILE: 988843LA M CONTAINER# EPIU225329 RAIL CAR# EPIX91119 ERG# 171 H03B	GM	24.13	T

RECEIVED subject to the classification and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is received
and order, except as noted (contents and condition of packages unknown), marked, consigned and dispatched as indicated above (upon said carrier
the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract)
agrees to carry to the usual place of delivery as indicated. If on its route, otherwise to deliver to another carrier on the route to said destination,
it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any
line interested in all or any said property, that every device to be performed hereunder shall be subject to the Bill of Lading terms and conditions
in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading forms and conditions in
the governing classification and demurrage conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC

Carrier: CSA Railroad Corp

Per:

Date:

Per:

Date:

Mark with "X" or "RC" to designate Hazardous Materials substances as defined by the Department of Transportation Regulations
governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials. Bills of
Lading issued in accordance with the Code of Federal Regulations, also, when shipping hazardous materials, the shipper's certification statement
created in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading class apply, unless a specific exception from this
requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Per:

Date:

Carrie Dubois 12-14-21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91119-2F

TO
Company: CHEMICAL WASTE MANAGEMENT
INC.
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777204
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2188

FROM
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 048791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company Acknowledgement of Receipt Per: _____ Date: _____	LA0000147272 (800) 338-2188 Date: 12/19/2001
Carrier 3: Chemical Waste Management, Inc. Acknowledgement of Receipt Per: <i>Joseph Carroll</i>	

80960 G
32360 T
48500 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SUI PHUR, LA 70665

RECEIVING TICKET # 1101001
WEIGHED BY _____

Bill of Lading (Page 1 of 2)

DOCUMENT # 01119-27

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD00077201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 503-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 096
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (484) 228-1674

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
DEFINITION OF SOLID WASTE UNDER 40CFR
261.4(b) 12.41

SHIPPER'S RESTRICTIONS

Ticket - Slot

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Unit
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. R 11 (BENZENE) PROFILE: 880643LA 3M CONTAINER# EPIU225127 RAIL CAR# EPIK01119 ERG# 171 H039	CM	24.13	T

RECEIVED subject to the classifications and marks in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (contents and condition of packages unknown), in good condition and destined as indicated above which said carrier (the said carrier being understood through this contract as meaning any person or persons in possession of the property under the contract) agrees to carry to its warehouse or delivery or other destination. If on the route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to said destination and as to each party of any line interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all of the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Print

Date

Per

Date

[Signature]

11/17/21

Luis Castro

11/18/21

Mark with "X" or "RQ" in appropriate design in Hazardous Materials Section as defined in the Department of Transportation Regulations permitting the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) & 172.201(d), Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's classification statement prescribed in section 172.201(d) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from this requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc.

Certification of receipt of materials

Print

Date

Carme Dubodreau

12-14-21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91119-2F

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT
INC.
Street: 7170 JOHN RHANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS RBM
LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 040791 060
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (484) 228-1624

Carrier 2: BNSF Railway Company
Acknowledgement of Receipt

Per:

Date:

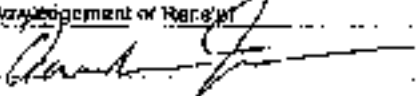
Carrier 3: Chemical Waste Management, Inc.

LA0000147272 (800) 339-2189

Acknowledgement of Receipt

Per:

Date:



12-14-87

052105

0091027-3A

7646412

Bill of Lading (Page 1 of 2)

DOCUMENT # 91027-3A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70685
 Phone: (337) 503-2188

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 5144 PASSYUNK AVE
 EPA ID: PAD 048701 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (484) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(b) 1241
 T. J. STANIS

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	TEMP
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. B. III (BENZENE) PROFILE: 868645CA IM CONTAINERS EPIU225153 RAIL CAR# EPIX91027 ERG# 171 H029	CM	24.30	T

RECEIVED subject to the descriptions and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in appropriate good order, except as noted (contents and condition of packages unknown), marked, packaged and delivered as indicated above which said carrier (the vessel carrier being understood through this contract as entering any person or corporation in possession of the property under the contract) agrees to carry to the actual place of delivery as specified herein. If en route, otherwise specified to another carrier on the route to such destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any kind interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 11/18/21
 Per: Luis Castro Date: 11/18/21

Mark with "X" or "RQ" if applicable to describe hazardous materials as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.301(a)(1) (b) of title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement required in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: [Signature] Date: 12-28-21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91027-3A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0090777201
City/State/Zip: SULPHUR LA 70685
Phone: (507) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA11040701098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	Date:
Per:	
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	Date: 12-28-21
Per: <i>[Signature]</i>	

84780 G
35140 T
49640 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

WEIGHED BY _____

163315
0091021-3B
Bill of Lading (Page 1 of 2)

DOCUMENT # 91021-3B

7/6/19

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LADD00777201
City/State/Zip: BURLINGHAM LA 70605
Phone: (337) 683-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 048791 086
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (484) 226-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

SHIPPER'S INSTRUCTIONS

Blank area for shipper's instructions.

Tickets 56165

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WT
X	1	RO, UN3077, ENVIRONMENTAL (Y) HAZARDOUS SUBSTANCE, BOLID. N.O.S. B. III (BENZENE) PROFILE: 968843LA IM CONTAINERS EPI0225353 RAIL CARN EPIX91021 ERG# 174 H330	CM	24.40	F

NET

RECEIVED subject to the above terms and conditions in effect on the date of the issue of this Bill of Lading, the property described above in approval of good order, except as noted (contents and condition of packages unknown), marked consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery or said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each corner of all or any of said property, over all or any portion of said route to destination and as to each party at any time involved in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railport Corp

Per: *[Signature]* Date: 11/17/21

Per: *Luis Castro* Date: 11/18/21

Mark with "X" or "NO" in appropriate columns hazardous materials as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1)-(3) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on this Bill of Lading does apply, unless a specific exception from the requirement is provided in the regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

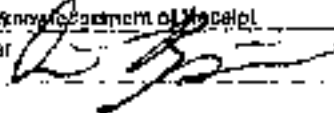
Per: *Carmen Ambodean* Date: 12-20-21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91027-3B

TO
Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SLUSHUR LA 70865
Phone: (337) 583-7189

FROM
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVI
EPA ID: PAD 049781 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (484) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 338-2169
Acknowledgment of Receipt	
Per: 	Date: 12-28-21

85260 G
34210 T
50520 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

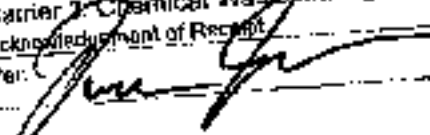
RECEIVING TICKET # 711011
WEIGHED BY _____

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91027-3C

TO
Originator: CHEMICAL WASTE MANAGEMENT
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 683-2189

FROM
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 9144 FASSYBUNK AVE
EPA ID: PAD 040701 080
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 328-1524

Carrier 2: BNSF Railway Company
Acknowledgment of Receipt
Per: _____ Date: _____
Carrier 2: Chemical Waste Management, Inc. LA0000747272 (800) 336-2189
Acknowledgment of Receipt
Per:  Date: 12-27-21

1530516
 Bill of Lading (Page 1 of 2)

004102102

26465

DOCUMENT# 91027-3D

10

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAU000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 582-2488

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASTYUNKAVE
 EPA ID: PAD 048781 008
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
 Titled 56967

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Unit
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. 9.11 (BENZENE) PROFILE: 8898431.A IM CONTAINERS EPIU225121 RAIL CAR# EPIX91027 ERG# 171 HCS#	CM	24.00	T

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is received in good order, except as noted (contents and condition of packages unknown), marked and classified as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery or said destination. If said route, otherwise to deliver to another carrier, or the route to said destination, is mutually agreed as to each carrier of all or any of said property, each of or any person or corporation of said route to destination and as to each party at any time involved in all or any said property, that every contract to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CBX Railroad Corp
 Per: *[Signature]* Date: 11/17/21
 Per: *Luic Castro* Date: 11/18/21

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Carrie Dubodaux* Date: 12-22-21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91027-3D

TO
Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70883
Phone: (337) 683-2109

FROM
Shipper: PHILADELPHIA ENERGY SOLUTIONS RRM LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 048791 096
City/State/Zip: PHILADELPHIA, PA 19115
Phone: (410) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
Per: <i>Derrick Garcia</i>	Date: <i>12-27-21</i>

1 1 16 1 1

82700 G
39280 T
48420 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #
WEIGHED BY

Bill of Lading (Page 1 of 2)

DOCUMENT # 91027-3E

201622

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: PHILADELPHIA PA 19146
 Phone: (215) 683-2188

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 0497B1 098
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

SHIPPER'S INSTRUCTIONS

WRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
Ticked 5/1/08

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Units
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B. III (BENZENE) PROFILE: 266843LA IM CONTAINER# EPIU226384 RAIL CAR# EPIX01027 ERG# 171 H03B	GM	24.33	T

NH

RECEIVED subject to the classifications and labels in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (quantity and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as indicated hereon, at its cost, direction to deliver to another party or otherwise to said destination. It is mutually agreed by each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time involved in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *E. 03/16* Date: *11/17/21* For: *Luis Castro* Date: *11/18/21*

Mark with "X" or "RD" in appropriate designated Hazardous Waste's Subsections as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 117.201(a)(1) (B) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.584(b) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the regulation for a particular material.


Designated Consignor: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Carmie Ambroseaux* Date: *12-28-21*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91077-3E

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SULPHUR LA 70665	
Phone: (337) 583-2169	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&E LLC	
Street: 3144 PASSYUNKAVE	
EPA ID: PAD 040701 098	
City/State/Zip: PHILADELPHIA, PA 19146	
Phone: (480) 228-1524	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	
Acknowledgement of Receipt	
Per: 	Date: 12-28-21

84920 G
34840 T
50080 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

WEIGHED BY _____

0523/08

WILBERT-38

Bill of Lading (Page 1 of 2)

DOCUMENT # 91027-3F

204/6000

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70065
 Phone: (337) 680-2100

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 006
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 228-1524

ADDITIONAL INFORMATION

VRC TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 201.4(a) 1241

J. Clark

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	CL
X	1	HC, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., B.III (DENZENE) PROFITE-560R43LA (IN CONTAINER# EPI1226244 RAIL CAR# EPIX91027 ERG# 171 H039	COM	24.33	T

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, weighed and counted as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as indicated herein, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: C&D Referral Corp
 Per: *[Signature]* Date: 11/18/21
 Per: *Luis Castro* Date: 11/18/21

Mark with "X" or "RC" if appropriate in Hazardous Materials Substances are defined in the Department of Transportation Regulations covering the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.204(a)(1) 55 of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(b) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirements is provided in the Regulations for a particular material.

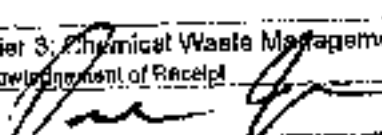
Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Carole Dubodreau* Date: 12-28-21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91027-3F

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SULPHUR LA 70685	
Phone: (557) 893-2160	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 049791 098	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 228-1624	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
For:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	Date: 12-28-21
For: 	

E/11/2020

TICKET #

IB 653168

GRS 85420 INHOBDD

08:50AM 12/20/2021

WEIGHED TICKET IB

GRS 85420 IB RECALLED 85420 G

IB 35660 IB 35660 T

IB 49760 IB 49760 N

IB 24.00 IB

10:17AM 12/20/2021

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #

704620

WEIGHED BY

U001404-001

W53004

Bill of Lading (Page 1 of 2)

DOCUMENT # 91424-2A

7641902

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70666
Phone: (337) 583-2188

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PLYMOUTH AVE
EPA ID: PA0048781088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
<i>Ticked Status</i>

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNCM
X	1	RO. UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 6.1 (BENZENE) PROF. ID: 088843LA	CM	24.30	T
		IM CONTAINER# EPIU225300			
		RAIL CAR# EPIX91424			
		ERG# 171 1039			

NH

RECEIVED subject to its classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above is, apparent good order, except as noted (contents and condition of packages unknown), marked, counted and weighed as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination it is mutually agreed as to each carrier of it of any of said property, over all or any portion of said route to destination and as to each party at any time interested in it or any said property, that every service to be performed hereunder shall be subject to the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: 11/19/21
Per: <i>Luis Castro</i>	Date: 11/19/21

Mark with "X" or "HC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Carrie Ambodeaux</i>	Date: 1-19-22

Bill of Lading {Continuation Sheet} 2 of 2

DOCUMENT# 81424-2A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SLIPPHUR, LA 70668
Phone: (337) 583-2188

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 338-2109
Acknowledgement of Receipt	
Per: <i>Joseph Combs</i>	Date: <i>11/19/2022</i>

85680 G
36100 T
49580 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 2601902
WEIGHED BY _____

000404-2B

153315

764909

Bill of Lading (Page 1 of 2)

DOCUMENT# 91424-2B

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7470 JOHN DHANNON ROAD
EPA ID: LADDD077201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049781 080
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

SHIPPER'S INSTRUCTIONS

Teddy Smith

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Unit
X	1	RO, UNS07, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 889843LA	CM	24.30	T
		IM CONTAINER# EPIU225358			
		RAIL CAR# EPIX01424			
		ERG# 171 H039			

AKH

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery at said destination. If on the route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any part of said route to destination and as to each party at any time involved in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: 11/19/21
Per: Luis Castro	Date: 11/19/21

Mark with "X" or "RD" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Part 172, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading case apply, unless a specific exemption from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Carrie Ambroseaux</i>	Date: 1-19-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# B1424-2B

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M I.T.C
Street: 3144 PASSYUNKAVE
EPA ID: PAD 0497B1 USA
City/State/Zip: PHILADELPHIA PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LAD000147272 (800) 336-2169
Acknowledgement of Receipt	
Per: <i>Jerrill Coy</i>	Date: <i>1.14.22</i>

CP1000 5307

85360 G
35160 T
50200 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7061909

WEIGHED BY _____

WY1404-DK
764882

03/10/08

Bill of Lading (Page 1 of 2)

DOCUMENT # 91424-2C

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LADD00777201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 583-2188

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASBYUNKAVE
EPA ID: PAD 048791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (484) 228-1624

ADDITIONAL INFORMATION

VRE TANK BOYUMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 201.46(a) 1241

John Stetson

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WT
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.111 (BENZENE) PROFILE: 068843LA	GM	24.28	T
		IM CONTAINER# EPIU225282			
		RAIL CARN# EPIX91424			
		ERG# 171 H039			

ASH

RECEIVED subject to the descriptions and tariffs in effect on the date of the issue of this Bill of Lading. The property described above is apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property while the contract agrees to carry to the usual place of delivery as said destination. If not to carry, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of either any of said property, over all or any portion of said route to destination and as to each party of dry time interested in all or any said property, that every service to be performed hereunder shall be subject to of the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with of the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Carrier: CSX Railroad Corp
Per: *[Signature]* Date: 11/19/21
Per: Luis Castro Date: 11/19/21

Mark with "X" or "RQ" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the bill of Lading does not apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignor: Chemical Waste Management, Inc
Certification of receipt of materials
Per: *[Signature]* Date: 1-18-22

84000 G
34340 T
49660 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

WEIGHED BY _____

W11404 ERW

W535110

Bill of Lading (Page 1 of 2)

DOCUMENT # 91424-2D

764855

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2188

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 086
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 226-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

John S. 11/19/21

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	HOW
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 6. III (BENZENE) PROFILE: 060843LA	CM	24.23	T
		IM CONTAINER# EPIU226349			
		RAIL CAR# EPIXB1424			
		ERG# 171 H034			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading. The property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on its route, it wishes to deliver to another carrier on the route to said destination, it is mutually agreed as to both owner of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 11/19/21
 Per: *Luis Castro* Date: 11/19/21

Mark off: "X" or "NO" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an option method for identifying hazardous materials on Bills of Lading 172.201 (a)(1) (ii) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as they stand on the bill of Lading does apply, unless a specific exception from this requirement is provided in the Regulations for particular materials.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

Per: *Carmen Ombodiano* Date: 1-14-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81424-20

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 1170 JOHN BRANNON ROAD
EPA ID: LA000777201
City/State/Zip: SULPHUR LA 70565
Phone: (337) 683-2188

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 048791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company
Acknowledgement of Receipt

Per:

Date:

Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169
Acknowledgement of Receipt

Per:

Date:

1-14-2022

2,414,000, 17

...

...

85580 G
35680 J
49900 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 20091855

WEIGHED BY _____

UN1404-8

659108

7641900

Bill of Lading (Page 1 of 2)

DOCUMENT # 91424-2B

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7770 JOHN BRANNON ROAD
 EPA ID: LA000077201
 City/State/Zip: SULPHUR LA 70885
 Phone: (937) 883-2188

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PA0 049781 090
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

SHIPPER'S INSTRUCTIONS

Telco 5648

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Class
X	1	RG, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9. III (BENZENE) PROFILE: 069843LA IM CONTAINER# EPIU225007 RAIL CAR# EPIX91424 ERG# 171 H03D	GM	24.98	T

RECEIVED subject to the disclaimers and limits in effect on the date of the issue of this Bill of Lading, the property described above is accepted in good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment and the conditions and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 11/19/21
 Per: Luis Castro Date: 11/19/21

Mark with "X" or "RCM" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on bills of lading 172.201(a)(1) (M) of 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Carmie Dubodreau* Date: 1-19-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# B1424-2E

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SULPHUR LA 70065	
Phone: (337) 593-2188	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M U.C.	
Street: 3141 PASSYUNK AVE	
EPA ID: PA0009791080	
City/State/Zip: PHILADELPHIA, PA 19143	
Phone: (480) 228-1524	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	
Acknowledgement of Receipt	
Per:	Date: 1-19-22

LA0000147272 (800) 338-2169

85400 G
35620 T
49780 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70865

RECEIVING TICKET # 764900
WEIGHED BY _____

053315

0091124-2P
764 886

Bill of Lading (Page 1 of 2)

DOCUMENT # 91424-2P

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: IAD000777201
City/State/Zip: SULLPHUR LA 70865
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 8144 PASSYUNKAVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (440) 228-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a)1 1241

John Stover

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNIT
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B.III (BENZENE) PROFILE: 989843LA	CM	24.23	T
		IN CONTAINER# EPIU225118			
		RAIL CAR# EPIX91474			
		ERG# 171 H03B			

MSD

RECEIVED subject to the disclaimers and limits in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, weighed and destined as indicated above which said carrier, the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract, agrees to carry to the knowledge of delivery as said destination. If on its route, otherwise to deliver to another carrier on its route to said destination, it is mutually agreed as to which carrier of all or any of said property, that every carrier to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Per: <i>Luis Castro</i>
Date: <i>11/19/21</i>	Date: <i>11/19/21</i>
<p>Mark with "X" or "RQ" as appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(b)(1) (7) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement described in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.</p>	
Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Kan. Dabson</i>	Date: <i>01.18.22</i>

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91424-2F

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SUITPHUR LA 70685
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LTC
Street: 3144 PASSYUNK AVE
EPA ID: PA15 048781 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1521

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	
LA0000147272 (800) 336-2189	
Acknowledgement of Receipt	
Per: <i>Daniel Henry</i>	Date: <i>1-18-22</i>

85260 G
35320 L
49940 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

WEIGHED BY _____

03504

0091043-64

764933

Bill of Lading (Page 1 of 2)

DOCUMENT# 91093-3A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 048781 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.11(b) 1241

Ticket 50549

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WTM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. & II (BENZENE) PROFILE: 066843LA	CM	24.35	T
		IN CONTAINER# EPIL225278			
		RAIL CAR# EP0K91003			
		CRG# 171 H039			

RECEIVER: subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract, agrees to carry to the usual place of delivery as per destination. If an alternate, otherwise tender to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CBX Railroad Corp
 Per: *[Signature]* Date: 11/19/21
 Per: Luis Castro Date: 11/19/21

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 49 CFR 172.201(a)(1) (2) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading 2008 apply, unless a specific exemption from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *[Signature]* Date: 1/25/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91093-3A

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SULPHUR LA 70065	
Phone: (337) 583-2169	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNKAVE	
EPA ID: PAD 049791 098	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (440) 228-1524	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	LA0000147272 (800) 338-2169
Acknowledgement of Receipt	
Per: <i>Joseph L. ...</i>	Date: <i>11/20/2022</i>

81000 G
31140 T
49860 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 762721

WEIGHED BY _____

0091043-3B

11/19/21

764249

Bill of Lading (Page 1 of 2)

DOCUMENT # 91093-3B

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70685
 Phone: (837) 683-2469

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 048791 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Trailed 56548

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UN39
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 8.1H (BENZENE) PROFILE: BB8843LA	CM	24.40	T
		1M CONTAINER# EPIU225247			
		RAIL CAR# EPIK91093			
		ERG# 171 H029			

NH

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If en route, enroute to enroute, enroute carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time involved in all or any said property, that every carrier to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 11/19/21 Per: Luis Castro Date: 11/19/21

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials (Substances) as defined in the Department of Transportation Regulation governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 192.201(a)(1) (R) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certificate statement prescribed in section 192.204(a) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

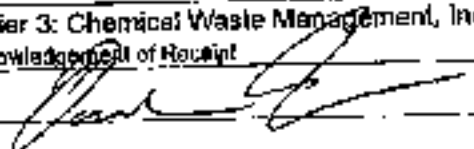
Per: *[Signature]* Date: 11/20/21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91093-3B

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SULPHUR LA 70085	
Phone: (337) 583-2168	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS H&M LLC	
Street: 3144 PASSYUNKAVE	
EPA ID: PAD 048791 098	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (410) 228-1524	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2189
Acknowledgement of Receipt	
Per: 	Date: 1-20-22

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

85580 G
35420 T
50160 N

RECEIVING TICKET # 200702

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

DOCUMENT # 91093-3C

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000772201
 City/State/Zip: SULPHUR LA 70686
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049781 088
 City/State/Zip: PHILADELPHIA, PA 19148
 Phone: (410) 228-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(k) 1241

T. J. Castro

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	LCM
X	1	RG. UNSOL'T, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 809843LA	CBM	24.40	Y
		IM CONTAINER# EPIU225319			
		RAIL CAR# EPIX01099			
		ERG# 171 H039			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the vessel carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, that all of any portion of said route to destination and as to each party of any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 11/19/21
 Per: *Luis Castro* Date: 11/19/21

Mark with "X" or "RC" in appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.204(a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

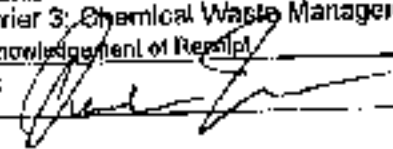
Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *[Signature]* Date: 1-20-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81093-30

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SULPHUR LA 70885	
Phone: (337) 883-2168	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M, LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 08781 088	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 228-1524	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2168
Acknowledgement of Receipt	
Per: 	Date: 1-20-22

01/11/2001

01/11/2001

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CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 714 820

WEIGHED BY _____

1053168

0041043-3A

7641915

Bill of Lading (Page 1 of 2)

DOCUMENT # 91093-3D

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70865
 Phone: (887) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PABBYUNIKAVE
 EPA ID: PAD 040781 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.41(b) 1241

Todo Stesso

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Unit
X	1	RD UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. B-II (BENZENE) PROFILE: 008843LA	GM	24.40	T
		RA CONTAINER# EPIU235018			
		RAIL CAR# EPIX91683			
		ERG# 171 H039			

NH

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is received in good order, except as noted (perhaps and condition of packages unknown), marked, counted and weighed as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as indicated above. If on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time indicated in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification, on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 11/19/21
 Per: Luis Castro Date: 11/19/21

Mark with "X" or "RD" if appropriate to designate Hazardous Materials Exemptions as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

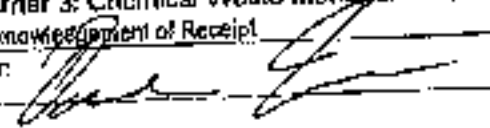
Per: *Carrie Ombodkins* Date: 1-19-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91093-3D

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LAD000777201	
City/State/Zip: SULPHUR LA 70665	
Phone: (337) 583-2160	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 049791 098	
City/State/Zip: PHILADELPHIA, PA 19146	
Phone: (480) 223-1524	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
Per: 	Date: 1-19-22

7/11/03 3307

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CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

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WEIGHED BY _____

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Bill of Lading (Page 1 of 2)

DOCUMENT# 91093-3B

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 582-2160

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 9144 PASSYLUNKAVE
EPA ID: PAD 049781 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 226-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

TRUCK STASSI

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 8. III (BENZENE) PROFILE: 9888431A	CM	24.25	T
		IM CONTAINER# EPIV225274			
		RAIL CAR# EPIX91093			
		ERG# 171 H030			

NH

RECEIVED subject to the classification and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (quantity and condition of packages unknown), marked, consigned and delivered as indicated herein which said carrier (the word carrier being understood through this contract to mean any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver in another center on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination, and as to each party if any then interested in or on any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: 11/19/21
Date: 11/19/21	Per: Luis Castro

Mark with "X" or "H" or "D" or "C" in appropriate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(e)(1) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed by section 172.204(b) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from this requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>[Signature]</i>	Date: 11/20/21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91093-3E

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70866
Phone: (504) 588-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 048781 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 338-2169	
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: 1.20.22

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CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7-723

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Bill of Lading (Page 1 of 2)

70-1913

DOCUMENT # 91095-3P

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 583-2180

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 049791 090
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40 CFR 261.4(a) 1241
<i>John Stess</i>

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	NCM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (MENZENE) PROFILE: 889843LA	GM	24.40	T
		IM CONTAINER# EPIU225245			
		RAIL CAR# EPIX91083			
		ERG# 171 H030			

NH

RECEIVED subject to the descriptions and terms in effect on the date of issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, crated and destined as indicated above which said carrier (the word carrier being understood to mean the person or corporation in possession of the property under the contract) agrees to carry to his warehouse of delivery or said destination. If en route, otherwise to deliver to another carrier on the route to said destination, this liability shall extend to each carrier of all or any of said property, even if or any portion of said route to destination and up to each party at any time involved in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and these terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Per: <i>Luis Castro</i>
Date: 11/19/21	Date: 11/19/21

Mark with "X" or "RC" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (7) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Carmine Ambrosiano</i>	Date: 1-19-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91093-3F

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN DRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70895
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS REM LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049781 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2189
Acknowledgement of Receipt	
Per: <i>Joseph C. [Signature]</i>	Date: 1/19/2022

C 2/11 10:00

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CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

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RECEIVING TICKET # _____

WEIGHED BY _____

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Bill of Lading (Page 1 of 2)

DOCUMENT# 91143-2A

7041837

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70885
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19148
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.116 1241
<i>Tanks 56554</i>

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	NO. UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 959843LA IM CONTAINER# EPIU225027 RAIL CAR# EPIX91143	CM	24.20	T
		EX# 171 H039			

AMP

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted hereon and contents of packages unknown, marked consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on the route, or en route to delivery, it arrives at another center on the route to said destination, it is mutually agreed as to each carrier of or any of said property, over all or any portion of said route to destination and as to each party at any time interested in it or any said property, that every service to be performed hereunder shall be subject to all the B/L of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the B/L of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 11-19-21 Per: *Luis Castro* Date: 11/19/21

Mark with "D" or "RQ" as applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials as DGRs of Lading 172.201(a)(1)-(7) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the B/L of Lading does not apply, unless a specific exception from the requirement is provided in the regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials
Per: *[Signature]* Date: 1-13-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01143-2A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA PA 19145
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2189
Acknowledgement of Receipt	
Per: <i>Joseph Com...</i>	Date: 11/31/02

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CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 162187

WEIGHED BY _____

1/23/08

UJH1145-215

7641844

Bill of Lading (Page 1 of 2)

DOCUMENT # 91143-23

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: GULPHUR LA 70665
Phone: (337) 683-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAU 049781 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (483) 278-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.41(a) 1241

SHIPPER'S INSTRUCTIONS

Tickets 36555

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) PROFILE: 069843LA	CM	24.28	T
		IM CONTAINER# EPIU225265			
		RAIL CAR# CPX81143			
		ERG# 171 H039			

214

RECEIVED subject to the specifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery or said destination. It is the route, otherwise to deliver to another carrier on the route so said destination (to mutually agreed to) or any of said property, over all or any portion of said route to destination, and as to each party of any this interest in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: 11/19/21
Per: Luis Castro	Date: 11/19/21

Mark with "X" or "RQ" in appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation (DOT) regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201 (a)(5) (D) of Title 49, Code of Federal Regulations, AKA, when shipping hazardous materials. The shipper's certification statement prescribed in Section 172.204(a) of the Federal Regulations, as followed on the Bill of Lading does apply, unless a specific exception from the requirements provided in the Regulation for a particular material.

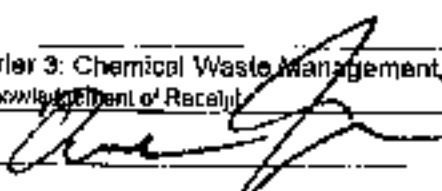
Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: Carrie Dubodreau	Date: 1-14-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# B1143-2B

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SULPHUR LA 70685	
Phone: (337) 589-2160	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3744 PASSYUNKAVE	
EPA ID: PAD 048797 088	
City/State/Zip: PHILADELPHIA, PA 19146	
Phone: (480) 228-1524	

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (HOO) 938-2189	
Acknowledgment of Receipt	
Per: 	Date: 1-11-22

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54800 J
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CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 261844

WEIGHED BY _____

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Bill of Lading (Page 1 of 2)

DOCUMENT # 91143-2C

704833

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 569-2165

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049761 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Tanks 516556

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNIT
X	1	RG UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. 9. III (BENZENE) PROFILE: 889643LA	GM	24.40	T
		IM CONTAINER# EPIB225079			
		RAIL CAR# EPIX01143			
		<i>EPIU225079</i>			
		FRGN 171 H339			

NH

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the properly described above in apparent good order, except as noted (contents and condition of package unknown), marked, counted and certified as indicated above which said carrier (the said carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as indicated hereon. If on its route, it wishes to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time involved in all or any said property, that every contract to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: 11/19/21
Per: <i>Luca Casto</i>	Date: 11/19/21

Mark with "X" or "RG" if appropriate designates hazardous materials. Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) of 49 CFR of Part 172 of the Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply unless a specific exception from the requirement is provided in the Regulation for a particular material.

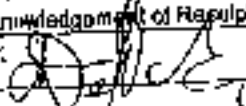
Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>[Signature]</i>	Date: 1-13-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01143-2C

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LAD000777201	
City/State/Zip: SULPHUR LA 70866	
Phone: (337) 683-2169	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 048781 096	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (440) 228-1524	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	Date:
For:	
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 338-2169
Acknowledgement of Receipt	Date: 1-13-22
For: 	

84560 G
34460 T
50100 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #

WEIGHED BY

1053316

WPH11452AN

Bill of Lading (Page 1 of 2)

DOCUMENT # 91143-2D

704/847

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 048781 033
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
Ticks 26557

SHIPPER INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B.III (BENZENE) PROF. LE: 888843LA	CM	24.28	T
		1M CONTAINER# EPIU226001			
		RAIL CAR# EPIX81743			
		ERG# 171 H339			

NH

Handwritten: NH, H039

RECEIVED subject to the declarations and liability in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, numbered and described as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery or said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. He mutually agrees as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in, all of any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the applicable regulations.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 11/19/21 Per: Luis Castro Date: 11/19/21

Mark with "X" or "RQ" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(b)(1) (B) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement provided in section 172.204(e) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per: *[Signature]* Date: 1/14/22

Bill of Lading (Continuation Sheet) 2 of 2

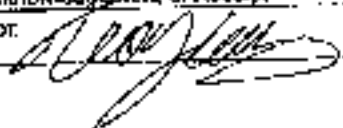
DOCUMENT# 91143-2D

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 040781 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Por:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2168	
Acknowledgement of Receipt	
Por: 	Date: 1-14-20

85560 G
35980 T
49980 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

WEIGHED BY _____

004143-2E

105368

704859

Bill of Lading (Page 1 of 2)

DOCUMENT# 91143-2E

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 00781 089
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 226-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Richard S. SSS

SHIPPING INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WGT
2	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9. II (BENZENE) PROFILE: 088B49LA	CM	24.85	T
		IM CONTAINERS EPIU226229			
		RAIL CARN EPIX01143			
		ERGE 171 H039			

248

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading. The property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and described as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery at said destination. If on the route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier at all or any of said points, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the prevailing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: USX Railroad Corp
Per: <i>[Signature]</i>	Date: 11/19/21
Per: <i>Luis Castro</i>	Date: 11/19/21

Made with "X" or "RC" ? appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading in accordance with 49 CFR 171.15(c) of the Federal Regulations. Also, when shipping hazardous materials, the shipper's certificate statement prescribed in Section 172.204(g) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Carmie Dubouchaux</i>	Date: 1-14-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91143-2E

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SULPHUR LA 70686	
Phone: (337) 583-2163	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNKAVE	
EPA ID: PAD 048761 068	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (484) 228-1124	

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	
Acknowledgment of Receipt	
Per:	Date: 1.14.22
LA0000147272 (800) 336-2188	

(811) 1234

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #

2001051

WEIGHED BY

0041143 2P

1/5/21/21

764831

Bill of Lading (Page 1 of 2)

DOCUMENT # 91143 2P

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SUITLAND LA 70669
 Phone: (337) 683-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (480) 228-1624

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
Added

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RO, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.D.S. B.III (BENZENE) PROFILE: 999843LA IM CONTAINER# EPIV225372 RAIL CAR# EPIX91143 ERG# 171 H039	CM	24.33	T

RECEIVED subject to the classifications and tests in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through UVA contracts as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery or said destination. It ceases route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each order of bill of lading, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to the Bill of Lading terms and conditions in the governing classification and the said terms and conditions. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 1/19/21
 Per: *Luis Castro* Date: 11/19/21

Marks with "X" or "RO" in appropriate designations hazardous materials substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this symbol is an optional method for identifying hazardous materials on bills of lading 172.201(a)(1)(ii) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(e) of the Federal Regulations, as indicated on the Bill of Lading does not, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Carmel Dubodreau* Date: 1-13-22

Bill of Lading (Continuation Sheet) 2 of 2

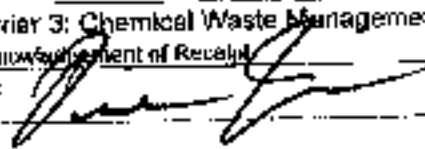
DOCUMENT# 81143-2F

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7173 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SLIDEL LA 70665
Phone: (504) 883-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049781 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	LA0000147272 (800) 338-2169
Acknowledgment of Receipt	
Per: 	Date: 1-13-22

(0.002, 0.001) 0.001

54680 G
34700 T
49950 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 70021051
WEIGHED BY _____

05335

UUNU-04

264800

Bill of Lading (Page 1 of 2)

DOCUMENT # 91070-3A

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7179 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2109

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PA0 049791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Trucks Stopped

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UN
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) PROFILE: 888431A M CONTAINER# EPIU225238 RAIL CAR# EPIX91070	CM	24.25	T
		ERG# 171 H038			

RECEIVED subject to the classification and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and certified as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination, or on the route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, that all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and these terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC		Carrier: CSX Railroad Corp	
Per: <i>[Signature]</i>	Date: 11/19/21	Per: <i>Luis Castro</i>	Date: 11/19/21

Made with "X" or "RQ" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Carme Dubodry</i>	Date: 1-12-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91070-3A

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2188

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PA0-049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (UO) 336-2189	
Acknowledgement of Receipt	
Per: <i>David Gray</i>	Date: <i>1/11/22</i>

12/17/00

84540 G
34650 T
49860 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #

112 (dec)

WEIGHED BY

0091070-3B

053108

Bill of Lading (Page 1 of 2)

DOCUMENT# 91070-3B

7004817

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN DRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR, LA 70085
 Phone: (337) 503-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 040781 008
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (440) 228-1524

ADDITIONAL INFORMATION

VHE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 124.1

Ticket 36784

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNIT
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B. III (BENZENE) PROFILE: 968843LA M CONTAINER# EPM226373 RAIL CAR# EPIK81070 ERG# 171 H03B	CM	24.26	T

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), stacked, consigned and defined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. It is the route, otherwise to deliver to similar carrier on the route to said destination. It is mutually agreed as to each carrier of it, or any of said property, over all or any portion of said route to destination and as to each party at any time interested in it, or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and to said terms and conditions. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and to said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Date: 11/19/21
 Per: *Luis Castro*

Mark with "X" or "H" if applicable to describe Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of the column is an optional method for identifying hazardous materials on bills of lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from this requirement is provided by the Regulation for a particular article.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Date: 1-12-22
 Per: *Carrie Dubodreau*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91070-3B

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SUITPHUR LA 70665	
Phone: (337) 583-2189	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3148 PASSYUNK AVE	
EPA ID: PAD 049791 086	
City/State/Zip: PHILADELPHIA, PA 19146	
Phone: (440) 226-1624	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	
Acknowledgement of Receipt	
Per:	Date:
LA0000147272 (800) 336-2169	
Date: 7-11-27	

0041070-3C

764812

Bill of Lading (Page 1 of 2)

DOCUMENT # 91070-3C

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BHANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049781 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.41M 1241

SHIPPER'S INSTRUCTIONS

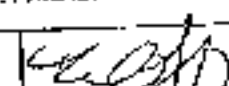
Tank 56485

NH



HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WGT
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9. III (BENZENE) PROFILE: 888843LA	CM	24.28	T
		IM CONTAINER# EPIU225223			
		RAIL CARRN EPIX91070			
		ERG# 171 11039			

NH

RECEIVED subject to the depositors and tariffs in effect on the date of the date of this Bill of Lading, the property described above in apparent good order, except as noted herein and conditions of package unknown, marked, consigned and received as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If used route, otherwise to deliver to another carrier on the route to said destination, it is hereby agreed as to each carrier of all or any of said property, except if any portion of said route to destination and as to each party of any time interested in or of any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: 	Date: 11/19/21
Per: Luis Castro	Date: 11/19/21

Mark with "X" or "RQ" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on bills of lading 172.204(a)(1) (D) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement provided in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the regulation is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: 	Date:  11/22/21

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91070-30

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70985
Phone: (507) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 040791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2189
Acknowledgement of Receipt	
Per: <i>Daniel Moran</i>	Date: <i>11272</i>

11/11/11 11:11:11

84700 G
34660 T
50040 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

WEIGHED BY _____

WILKINSON

05/21/08

Bill of Lading (Page 1 of 2)

DOCUMENT# 91070-3D

762178

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70865
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3444 PASSYUNK AVE
EPA ID: PAD 040701 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (484) 220-1524

ADDITIONAL INFORMATION

VRE TANK BOI FORMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Tulio Soto

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Units
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 0, II (BENZENE) PROFILE: 980843LA	CM	24.35	T
		1M CONTAINER# EPIU225352			
		RAIL CAR# EPIX91070			
		ERG# 171 H030			

NH

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry in its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier enroute to said destination. It is mutually agreed as to each carrier of it or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: 11/19/21
Per: <i>Luis Castro</i>	Date: 11/19/21

Mark with "X" or "RD" if appropriate for designate Hazardous Materials. Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method of identifying hazardous materials on Bill of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certificate statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Carrie Dubocleaux</i>	Date: 1-11-22

Bill of Lading (Continuation Sheet) 2 of 2

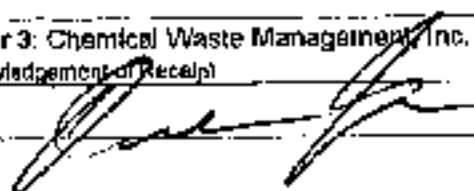
DOCUMENT# 81070-3D

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: BULPHUR LA 70685
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 010791 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
Per: 	Date: 1-11-92

C 111 100 30

85120 G
35220 T
49900 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 111 100 30

WEIGHED BY _____

0532108

00410710-3E

764605

Bill of Lading (Page 1 of 2)

DOCUMENT # 91070-3E

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70885
Phone: (337) 589-2188

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(b)(1241)

Used Solids

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RG, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) PROFILE: 869848LA IN CONTAINER EPU225204 RAIL CAR# EPIX91070	CM	24.40	T
		ERG# 171 H039			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above when said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If otherwise, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any line involved in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: GSX Railroad Corp
Per: <i>[Signature]</i>	Date: 11/19/21
Date: 11/19/21	Per: Luis Castro

Mark with "X" or "RG" if applicable to designate Hazardous Materials Substances as defined by the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on bills of Lading 172.204(b)(1) of Title 49, Code of Federal Regulations, Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management Inc	Certification of receipt of materials
Per: <i>Carrine Dubodaine</i>	Date: 1-12-22

Bill of Lading (Continuation Sheet) 2 of 2


DOCUMENT# B1070-3E

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70885
Phone: (337) 583-2160

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049701 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 338-2168
Acknowledgement of Receipt	
Per: 	Date: 1-11-22

A5280 C
35140 T
50140 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7041801

WEIGHED BY _____

UUM10-3F

053108

Bill of Lading (Page 1 of 2)

INCUMBENT # 91070-3F

764796

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2188

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049791 008
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (481) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.468 1241

SHIPPER'S INSTRUCTIONS

Tel: 56488

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE. SOLID, N.O.S. 9.11 (BENZENE) PROFILE: 968B43LA 1M CONTAINER# EPIU225381 RAIL CAR# EPIX#1070 ERG# 171 11039	CM	24.36	T

NU

RECEIVED subject to the classification and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract to include any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the way to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: [Signature] Date: 11/19/21 Per: Luis Castro Date: 11/19/21

Mark with "X" or "RQ" if shipment is of designated Hazardous Materials substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (ii) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per: [Signature] Date: 1-11-22

Bill of Lading (Continuation Sheet) 2 of 2

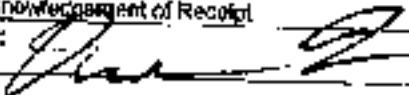
DOCUMENT# 91070-3F

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70085
Phone: (337) 683-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049781 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2189	
Acknowledgement of Receipt	
Per: 	Date: 1-11-22

6.11.11

85040 C
35040 T
50000 N

CHEMICAL WASTE MANAGEMENT, INC
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 1011796

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

053504

0041150-34
765622

01150 JA

DOCUMENT #

To

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 683-2100

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 040701 000
 City/State/Zip: PHILADELPHIA, PA 19144
 Phone: (480) 228-1624

ADDITIONAL INFORMATION

VME TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 56038

SHIPPER'S INSTRUCTIONS

48,460

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ UN3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B.L. (BENZENE) PROFILE: 9898431A	CM	24.23	T
		IM CONTAINER EPIU326217			
		RAIL CAR# EPIX91160			
		ERG# 171 H039			

RECEIVED subject to the classifications and bills in effect on the date of delivery of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), received and delivered as indicated above unless said carrier (the vessel carrier unless indicated through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination it is mutually agreed to such carrier as of or city of said itinerary, over all or any portion of said route to destination and as to each fully if any time interested in or any said property, that only service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: *[Blank]* Per: *Luis Castro* Date: *2/8/22*

Mark with "X" or "HC" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. This use of HCs is an optional method for identifying hazardous materials on Bills of Lading (49 CFR 171.15) of the Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement (required to fulfill 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading date apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certificate of receipt of materials

Per: *[Signature]* Date: *[Blank]* Per: *[Signature]* Date: *2/8/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# B1150-3A

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC.
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 503-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049781 008
City/State/Zip: PHILADELPHIA PA 19116
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company Acknowledgement of Receipt:	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2189
Acknowledgement of Receipt:	
Per: <i>Joseph Conville</i>	Date: <i>2/28/2022</i>

79200 C
30760 J
48440 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

004115D-3B

765624

91150-3B

DOCUMENT#

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR LA 70686
 Phone: (337) 583-2100

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3141 PASSYUNK AVE
 EPA ID: PA0004971000
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (484) 228-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(d) (2)(4)

Tickets 56039

SHIPPER'S INSTRUCTIONS

NH

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNIT
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 3, (BENZENE) PROFILE: 660043LA IM CONTAINER# EHU225141 RAIL CAR# EPIX01160 ERG# 171 H039	CM	24.35	Y
					NH

\$8,700

RECEIVED subject to the classifications and terms (in effect) on the date of the issue of this Bill of Lading, the property described above is apparent, sound order, except as noted (quantity and condition of packages unknown), manifest consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. It is mutually agreed as to each carrier or all or any of said property, that all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every article to be transported hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: *[Blank]*
 Per: Luis Castro Date: 2/28/27

Mark with "X" or "RC" if appropriate to designate a Hazardous Material Substance as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulations for a particular shipment.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

To: *Blenda Spicer* Date: *2/28/27*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81160-3B

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 683-2166

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3444 PASSYUNK AVE
EPA ID: PA1010781008
City/State/Zip: PHILADELPHIA, PA 19115
Phone: (480) 220-1624

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (600) 335-2189	
Acknowledgment of Receipt	
Per: <i>[Signature]</i>	Date: <i>2-28-22</i>

82940 G
33900 T
49040 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 71056004

WEIGHED BY _____

053315 004150-3C TLE5-LOS

Bill of Lading (Page 1 of 2)

91150-3C

DOCUMENT#

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC.
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: IAD000777201
 City/State/Zip: SULPHUR LA 70886
 Phone: (337) 663-2180

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 040791 080
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (480) 226-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) (2)(4)

Trucks stop

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Weight
X	1	RQ, UNSOLY, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, H.O.S. 9. III (BENZENE) PROFILE: 060643LA	CM	24.55	T
		IN CONTAINER# EPIU225339			
		RAIL CAR# EPIXB160			
		ERG# 171 H039			

49,100

RECEIVED (subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (quantity and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination, if on his route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading laws and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading laws and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: *[Blank]*
 Per: *Luis Castro* Date: *2/2/02*

Mark with "X" or "dot" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 112.2110(a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certificate shall also be provided in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

Per: *Belinda Spitzer* Date: *2/08/02*

Bill of Lading (Continuation Sheet) 2 of 2


DOCUMENT# 811641-903

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777204
City/State/Zip: SULPHUR, LA 70865
Phone: (337) 503-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3114 PASSYUNKAVE
EPA ID: PAD 069701 000
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: 	Date: 2-28-22

82100 G
34000 T
46100 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 17651008

WEIGHED BY _____

053314

09115030

765010

Bill of Lading (Page 1 of 2)

91150-30

DOCUMENT #

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777204
 City/State/Zip: GULFPORT LA 70605
 Phone: (337) 583-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNICAVE
 EPA ID: PAD 040701 008
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 220-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 56044

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIM. MARKS & EXCEPTIONS	Type	Volume	WGT
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B. II (BENZENE) PROFILE: 000045LA IN CONTAINER# EPIU226075 RAIL CAR# EPIX01150 ERGB 171 H039	CM	24.35	Y
				48,700	
				04	

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this bill of Lading. The property described above is presented as per info. received as noted (contents and condition of packages unknown), typical consigned and destined by individual phone number each center (the word center being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as sold destination. If on its route, or (prior to delivery) to another center on the route to said destination, it is mutually agreed as to each center of it or any of said property, over all or any portion of said route to destination and as to each party of any one interested in it or any said property, that every center in its possession hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: *[Blank]*
 Per: Luis Castro Date: 2/2/22

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Reimburse as defined in the Department of Transportation Regulations pursuant to the implementation of hazardous materials. The use of this column is an optional method for marking hazardous materials on Bills of Lading 172.203(a)(1) (B) of Title 49 Code of Federal Regulations, *Part of our shipping instructions materials, the shipper's certification shall be provided in section 172.204(a) of the Federal Regulations, as provided on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.*

Designated Consignee: Chemical Waste Management, Inc
 Condition of Property of Consignee
 Per: *Belinda Spicer* Date: *2/2/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 90150-30

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 683 2100

Shipper: PHILADELPHIA ENERGY SOLUTIONS I&M LLC
Street: 3161 PASSYUNK AVE
EPA ID: PAD 040731 090
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (484) 920-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	LAD000147272 (800) 395-2169
Acknowledgment of Receipt	
Per: <i>Vernon K Paul</i>	Date: <i>2-28-20</i>

82600 G
34140 T
48460 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70865

RECEIVING TICKET # 145610

WEIGHED BY _____

163004

0091150-3E

7105635

Bill of Lading (Page 1 of 2)

01150-3E

DOCUMENT #

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULLY LA 70085
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PARSYUNKAVE
 EPA ID: PAD 049701 080
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(d) 1241

Ticked 5/20/22

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WGT
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (BENZENE) PROFILE: 989843LA	CM	24.20	T
		IN CONTAINER EPIU225321			
		RAIL CAR EPIX91160			
		ERG# 171 H030			

48,400

RECEIVED subject to the conditions and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and destined as indicated above which shall remain (no word either being underlined through this contract as meaning any person or corporation in possession of the property under the contract) agree to carry to the usual place of delivery as each destination. It is its route, otherwise to deliver to another carrier on the route to an destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time it is used in all or any said property, that every contract to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification of the date of shipment. Shipper hereby certifies that he is further subject to the Bill of Lading terms and conditions in the governing classification on the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: Per: *Luis Castro* Date: *2/2/22*

Mark with "X" or "RD" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is as required for handling hazardous materials on Bills of Lading 172.201(a)(1) (B) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certificate of shipment prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the description for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per: *Belinda Spicer* Date: *01/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 911501-312

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 040701 090
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (413) 220-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Por:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
Por: <i>Joseph Connors</i>	Date: <i>3-11-2023</i>

CPLU 45501

TICKET 24

TO 65509
GROSS WEIGHT 10000000
NET WEIGHT 05017097

NET WEIGHT 24

NET	05550	TO	10000000	83620 G
NET	35200	TO		35200 T
NET	40750	TO		48420 N
NET	24,701	TO		
NET	05017097	TO		

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7651035

WEIGHED BY _____

053314

009150-3F

765626

Bill of Lading (Page 1 of 2)

91150-3F

DOCUMENT#

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777204
City/State/Zip: SUIPHUR LA 70685
Phone: (337) 603-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 010781 038
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1624

ADDITIONAL INFORMATION

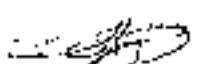
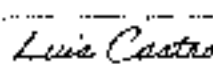
WRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.46(f) (2)(4)

Tickets 56013


SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WGT.
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.III (BENZENE) PROFILE: 009B431.A	DM	24.33	T
		IN CONTAINERS# EPIU225226			
		RAIL CAR# EPIX01160			NH
		ERG# 1/1 H03B			

RECEIVED: subject to the classifications and labels (in effect) on the date of the issue of this Bill of Lading, the property described above is accepted and loaded, except as noted (contents and condition of packages unknown), marked, counted and delivered as indicated above while said carrier (the word carrier being understood through this contract as including any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If en route, otherwise to deliver to another carrier on the route in said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time involved in all or any part thereof, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
For: 	Date: 
Date: 2/19/02	Date: 2/19/02

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials, the use of the column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1)(ii) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper certifies that it is familiar with and complies with the requirements of 172.204(a) of the Federal Regulations, as published on the Bill of Lading date apply, unless a specific exception from the requirements is provided in the regulations for a particular material.

Resigned Consignee: Chemical Waste Management, Inc	Collection of receipt of materials
For: 	Date: 2/28/02

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01160-3F

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD00077201
City/State/Zip: SULPHUR LA 70066
Phone: (337) 503-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS #8M LLC
Street: 5144 PASSYUNKAVE
EPA ID: PAD 049701 000
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 328-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LAC000147272 (800) 330-2160	
Acknowledgement of Receipt	
Per: <i>Veronica K Paul, V. K. Paul</i>	Date: <i>2-28-22</i>

11/11/00

11/11/00

82180 G
33820 T
48360 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7650250

WEIGHED BY _____

W53009 UM1141-SH 7/05/02

Bill of Lading (Page 1 of 2)

DOCUMENT# 01141-3A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN DRANNON ROAD
 EPA ID: LA000077201
 City/State/Zip: SULPHUR LA 70085
 Phone: (337) 503-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PAD 049791 090
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 270-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 55595

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNIT
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (11)(F)(2)(F)(1) PROFILE: 98#B431A IM CONTAINER# EPIU225085 RAIL CAR# EPIXR1141	CM	24.10	T
		ERG# 171 H039		NH	

43,360

RECEIVED subject to the classification and terms in effect as the date of the issue of this Bill of Lading, the property described above is apparent, good order, except as noted (specimens and condition of packages unknown), loaded, consigned and destined as indicated above which said carrier, the vessel carrier being understood through this contract as receiving the benefit of exemption by possession of the property under the contract agrees to carry to the usual place of delivery as said destination. In no event, obligation to deliver to either origin or the route to said destination is mutually agreed as in each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time hereafter as to any said property, that every vessel to be proceeding hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the applicable rules and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: *[Blank]*
 Per: Luis Castro Date: 9/2/02

Mark with "X" or "RD" in appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bill of Lading 172.201(b)(1) (a) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper and destination information provided in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the regulations is provided in the Regulations for a specific material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *[Signature]* Date: 3/12/2

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91144-3A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
BUdel: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA, 70665
Phone: (337) 603-2109

FROM

Shipper PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 0497B1 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-1624

Carrier 2: BNSF Railway Company
Acknowledgement of Receipt

Por: _____ Date: _____

Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 338-2100

Acknowledgement of Receipt

Por: *Joseph Collier* Date: *3-1-2022*

EPH 22-2005

10:51 47

10 053209
GROSS 83440 101100000
NET 35080 057017822

00100000 13071 47

GROSS	83440	10	83440 G
NET	35080	10	35080 T
NET	48360	10	48360 N
NET	24,000	1000	
NET	057017822		

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 71051019

WEIGHED BY _____

05355

001141-5B

765653

Bill of Lading (Page 1 of 2)

DOCUMENT # 81141-3B

TO

Compliee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA000077201
 City/State/Zip: SULLY LA 70665
 Phone: (337) 683-2100

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNIKAVE
 EPA ID: PAD 040791 DBB
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (484) 220-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.1(b) 1241

Ticket 55596

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B. III (BENZENE) PROFILE: 888843LA IM CONTAINER# EPIU225109 RAIL CAR# EPIX91141	CM	24.35	T
		SRG# 124 H030			

48760

RECEIVED subject to the classification and to be included on the date of the issue of this bill of lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, counted and loaded as indicated above which said carrier (in event carrier being ordered through this contract as receiving any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as indicated above. If in its route, otherwise to deliver to another center en route to said destination. It is mutually agreed as to each center of all or any of said property, over all or any portion of said route to destination and as to each party of any flow indicated in all or any said property, that every carrier to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading laws and conditions in the governing classification and the conditions and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: *[Blank]*
 Per: *Lucia Castro* Date: *2/2/22*

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations, including the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) per 49 CFR 172.201(a)(1) of the Federal Regulations. Also, when shipping hazardous materials, the shipper's notification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception (such as) requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 By: *Belinda Spicer* Date: *3/1/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81141-3H

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 1170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70888
Phone: (337) 603-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PACBYUNKAVE
EPA ID: PA0 040781 001
City/State/Zip: PHILADELPHIA, PA 19148
Phone: (410) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2189	
Acknowledgment of Receipt	
Per: <i>Veronica Paul</i>	Date: <i>3-1-22</i>

CP14K5107

TICKET 53

ID: 655155
655155 03970 101100000
01:0010 05-01/2022

CONTAINER WEIGHT		53
gross	10250 lb	83900 G
tare	2510 lb	35160 T
net	7740 lb	48740 N
net	7740 lb	
gross	6501 lb	

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7105653

WEIGHED BY _____

15355

004114506

765637

Bill of Lading (Page 1 of 2)

DOCUMENT# 00141-30

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LADDD0777201
 City/State/Zip: SULPHUR LA 70086
 Phone: (337) 603-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PA0 019791 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 228-1524

ADDITIONAL INFORMATION

WRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(b) 1241

Tide 55893

SHIPPER'S INSTRUCTIONS

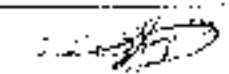
NH

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	HQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. D.H (BENZENE) PROFILE: 088843LA IM CONTAINER# EPIU225284 RAIL CAR# EPIX91141 ERG# 171 H030	CM	24.35	T
					NET

48,700

NEEDLESS subject to the conditions and tariffs in effect as the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which and contents (the true contents being understood through this contract) is received by the carrier or consignee in whole or in part under the contract appears to carry to the usual place of delivery or said destination. If on its route, otherwise to deliver in whole or in part to the consignee said destination it is initially agreed to as such carrier of all or any of said property, then all or any portion of said goods to destination and as to each party of any transportation of all or any said property, that every consignor is responsible hereunder until the subject of the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the 191 of Lading terms and conditions in the governing classification and these terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: GSX Railroad Corp

Per:  Date: For: Luis Castro Date: 2/2/22

Mark with "X" or "H" or appropriate in this column Hazardous Materials Regulations as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is optional and used for identifying hazardous materials on the Bill of Lading 172.201(a)(1)(ii) of Title 49, Code of Federal Regulations. Also, unless shipping hazardous materials, the shipper's responsibility is defined in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply. Unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials
 Per: Date:

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01141-30

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (337) 603-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 040701 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 330-2169	
Acknowledgement of Receipt	
Per: Vernon & Paul <i>Vernon & Paul</i>	Date: 3-1-22

EP1422524
TICKET 26

16 283195
88003 86140 111100000
09:4801 03/01/2022

00000000 TICKET 26

88003	86140	111100000	84140 G
1000	25500	10	35420 T
001	00000	10	48720 N

001 28.36 100

10:0000 03/01/2022

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7105637

WEIGHED BY _____

100555

004114-30

745639

Bill of Lading (Page 1 of 2)

DOCUMENT# 01141-30

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD00077201
 City/State/Zip: SUI, PHUR, LA 70665
 Phone: (337) 580-2100

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 080
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 728-1524

ADDITIONAL INFORMATION

WRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 55894

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Weight
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 0680431.A	CM	24.28	T
		IM CONTAINER# EPIU225239 RAIL CAR# EPIX01441			
		ERG# 171		NH	

48,560

RECEIVED subject to the classifications and labels in effect on the date of the issue of this Bill of Lading, the property described above in typical good order, except as noted (contents and condition of packages unknown), marked, numbered and destined as indicated above (which shall control) (this word shall be used unless indicated through this contract as requiring any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on its route, it wishes to deliver to another carrier on the route to said destination, it is entirely agreed as to such carrier of all or any of said property, or all or any portion of said route to destination and as to each party of any time taken by all or any said property, that every notice to be performed hereunder shall be subject in all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: _____
 Per: Luis Castro Date: 2/8/22

Mark "X" or "RD" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification published pursuant to section 177.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

By: *Blunda Spicer* Date: 3/1/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91141-3D

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC
Street: 3141 PASSYUNK AVE
EPA ID: PA00048791098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (410) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 338-2169	
Acknowledgement of Receipt	
Per: <i>Dorothy</i>	Date: <i>3-1-27</i>

C 114 113
TICKET 30 239

TO 653375
GROSS WEIGHT TO BE SHIPPED
09:5604 05/01/2022

ORDERED WEIGHT 30
GROSS WEIGHT TO BE SHIPPED 83020 G
NET 34260 TB 34260 T
NET 48760 TB 48760 N
NET 24,30 TB
09:5604 05/01/2022

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 11056039
WEIGHED BY _____

052009

001141-3E

1765659

Bill of Lading (Page 1 of 2)

DOCUMENT # 01141-3E

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR, LA 70666
 Phone: (337) 683-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 048791 080
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (480) 220-1624

ADDITIONAL INFORMATION

VRF TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Talk 55577


SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	LDV
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9.11 (BENZENE) PROFILE: 988243LA	CM	24.38	T
		IM CONTAINER# EPIU225242			
		RAIL CAR# EPIX91141			NA
		ERG# 171			
		H03R			

48760

RECEIVED subject to the descriptions and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (conditions and contents of packages unknown), stacked, covered and dunnaged as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If units route, otherwise to within 15 miles of the place of destination unless mutually agreed as to each parcel of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in or for any said property, that every contract to be performed thereunder shall be subject to the Bill of Lading terms and conditions in the governing classification on the case of shipment. Shipper hereby certifies that this is in accordance with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC Carrier: CBX Railroad Corp

For:  Date: Per: Luis Castro Date: 2/2/22

Mark with "X" or "RQ" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of the column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) OR of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement provided in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading, does apply, unless a specific exemption from the requirements is provided in the regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

By: Bolinda Spicer Date: 3/2/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91141-3E

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Block: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70085
Phone: (337) 503-2168

Shipper: PHILADELPHIA ENERGY SOLUTIONS H&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 088
City/State/Zip: PHILADELPHIA, PA 19119
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Pw:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 338-2189	
Acknowledgement of Receipt:	
Pw: <i>Vernice K PAUL</i>	Date: <i>3-2-23</i>

CP1402-5842

TICKET 15

HT 013209
GROSS 04900 111000000
TARE 0000 05/02/2002

00100000 10311 15

GROSS	84300	HT	013209	84300 G
TARE	35520	HT		35520 T
NET	48780	HT		48780 N
HT	21.30	HT		
HT	05/02	2002		

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 176051059

WEIGHED BY _____

1053315

001141-3F

765689

Bill of Lading (Page 1 of 2)

DOCUMENT# 91141-3F

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LAD001977201	
City/State/Zip: SM.PHUR GA 30685	
Phone: (887) 503-2100	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNKAVE	
EPA ID: PA0 040701 008	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (410) 220-1624	

ADDITIONAL INFORMATION	
VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 124?	
<i>John Spicer</i>	

SHIPPER'S INSTRUCTIONS	

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	LCM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., B.III (BENZENE) PROFI #: 0694431 A IM CONTAINER# EPIU235281 RAIL CAR# EPIXR1141 ERG# 175 1-039	DM	24.15	7
				48,300	
				Net	

RECEIVED subject to the classifications and inks in effect on the date of the issue of this Bill of Lading, the quantity described shown in apparent good order, except as noted (contents and condition of packages withstood), received, consigned and delivered as indicated above which shall constitute the void carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract signed in conformity with the description of delivery as said description. If bills of lading are issued for separate consignments en route to said destination it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any the interested in all or any such consignment, that every consignment to be performed hereunder shall be subject to all the Bill of Lading laws and conditions in the governing classification on the date of shipment. Shipper hereby certifies that it is in conformity with all the Bill of Lading laws and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Port: *[Signature]* Date: 2-2-22 Port: Luis Castro Date: 2/2/22

Mark with "X" or "RQ" appropriate to designate Hazardous Materials Balances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(5) (ii) of Title 49, Code of Federal Regulations, 49 CFR, when shipping hazardous materials. The Shipper's certification statement prescribed in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exemption from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials
 Date: 3/3/22
Belinda Spicer

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81141-3F

TO
Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR, LA 70065
Phone: (337) 683-2109

FROM
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 010791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (410) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2100	
Acknowledgment of Receipt	
Per: <i>Derrick L. Gray</i>	Date: <i>3.1.22</i>

E144225231

TICKET 7

TO: 65337a
ORDER: 02396 111100000
07:0600 03/03/2022

00000000 TICKET 7

Order	02396	to RECEIVED	82380 G
Lot	34379	to	34320 T
Net	48060	to	48060 N
Net	54.03	to	
03/03/2022			

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 11652159

WEIGHED BY _____

10523114

004444-2A

765600

Bill of Lading (Page 1 of 2)

DOCUMENT # 01494-2A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAI000777201
 City/State/Zip: SULPHUR LA 70805
 Phone: (337) 503-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 093
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 220-1024

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 55603

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNTS
X	1	RG, UN3027, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B. III (BENZENE) PROFILE: 008843LA	GM	24.14	Y
		IM CONTAINER# EPIU226358 RAIL CAR# EPIX91494			
		ERG# 171 H030		NA	

48,360

RECEIVED subject to the classifications and tests in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, equipped and dunnaged as indicated above which said carrier (the word carrier being understood through this Bill of Lading as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. It shall receive, otherwise to wit in another contract or otherwise to said destination, it is mutually agreed as to each carrier at all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that the information furnished on this Bill of Lading complies with the requirements of the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: Per: *Luis Castro* Date: *2/2/22*

Mark with "X" or "RC" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials under 49 CFR 172.202(a)(1)(B) of title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper certifies a statement prescribed in section 172.214(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Intended Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per: *Carrie Ambrose* Date: *2-25-22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01494-2A

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANFON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70865
Phone: (337) 683-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS RRM LLC
Street: 3144 PASBYUNIKAVE
EPA ID: PAC 048701 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 936-2169	
Acknowledgment of Receipt:	
Per: <i>Neuman K Paul</i>	Date: <i>2-25-22</i>

10/1

82140 G
34000 T
48140 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 108600
WEIGHED BY _____

153004
 Bill of Lading (Page 1 of 2)

0011444-2B

765606

DOCUMENT# 91494-2B

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA000077201
 City/State/Zip: SLU, PHUJ LA 70993
 Phone: (337) 580-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PAD 010791 098
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticks 551004

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9, III (BENZENE) PROFILE: 889843LA	CM	24,35	T
		IM CONTAINER# EPIU225789			
		RAIL CAR# EPIX01494			
		ERG# 171 4099		NA	

48,700

RECEIVER subject to the classification and tariffs in effect on the date of the issue of this Bill of Lading, the property described herein is approved under, except the rated contents and condition of packages unknown, marked consignee and destined as indicated above which said carrier does warrant being undertaken through this contract as involving any person or corporation's possession of the property and/or the consignor agrees to carry to the usual place of delivery as said destination. It is the carrier's duty to deliver to and/or carrier to the route to each destination. It is mutually agreed as to each carrier of all or any of said property, over all of any portion of said route to destination and as to each party of any line involved in all or any said property, that every service to be performed hereunder shall be subject to all the terms of the Bill of Lading and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: Per: Luis Castas Date: 2/2/22

Mark with "X" or "NO" if applicable to describe Hazardous Materials Shipper's as defined in the Department of Transportation Regulations governing the transportation of Hazardous Materials. The use of this column is an option for identifying hazardous materials on Bills of Lading 172.201 (a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204 (c) of the Federal Regulations, as indicated on the Bill of Lading data apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per: *[Signature]* Date: *[Signature]* 2-28-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01104-2B

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC.
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70085
Phone: (337) 503-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3161 PASSYUNK AVE
EPA ID: PAD 048791 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (410) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Joseph Carls</i>	Date: <i>2/28/2002</i>

79480 G
30760 T
48720 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70865

RECEIVING TICKET # _____

WEIGHED BY _____

053314

W11144-2C

765579

Bill of Lading (Page 1 of 2)

DOCUMENT # 91494-20

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SLULPHUR LA 70665
Phone: (337) 503-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASBYUNIKAVE
EPA ID: PAD 040791 000
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 55605

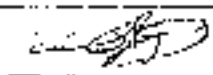
SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Weight	UOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 3. II (BENZENE) PROFILE: 069843LA	CM	21.45	T
		1M CONTAINER EPU226215			17039
		RAIL CARRN EPIX91494			
		ERG# 171 H030			AXI

48,900

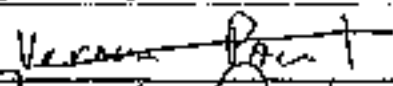
RECEIVED subject to the descriptions and terms in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (quantity and condition of packages included), marked consigned and assigned as intended solely when sold herein (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) prior to entry to the usual place of delivery as sold destination. It is hereby agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party, that the carrier is at every and properly, that every carrier to be performed hereunder shall be subject to all the RRI of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the additional terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per:  Date: Per: Luis Castro Date: 2/2/22

Mark with "X" or "RU" appropriate to designate Hazardous Materials. Shipper certifies as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of the column is an optional method for identifying hazardous materials on Bills of Lading 172.204(a)(1) (ii) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper certification statement presented in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is noted in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per:  Date: 2/25/22

Carrie Dubodaux 2-25-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91484-20

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 593-2100

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3141 PASSYUNK AVE
EPA ID: PAD 049781 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Por:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2100	
Acknowledgement of Receipt	
Por: <i>Damon Key</i>	Date: <i>12-25-22</i>

011

83140 G
34160 T
48980 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #

765529

WEIGHED BY

1153004

0091444-211

765528

Bill of Lading (Page 1 of 2)

DOCUMENT # B1104-2D

8

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7173 JOHN BRANNON ROAD
EPA ID: LA000777281
City/State/Zip: SULPHUR, LA 70065
Phone: (337) 583-2188

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 DR0
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (484) 226-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 201.46(i) 1211

Trucks 55606

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	QTY SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	HQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 6.1 (BENZENE) PROFILE: 06004SLA	CM	24.10	T
		IM CONTAINER# EPIU225269		<i>14039</i>	
		RAIL CARN# GPXB1454			
		ERG# 121 H038		<i>NA</i>	

48,800

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (excepts and conditions of packages unknown), marked, counted and destined as indicated above which said carrier (the word carrier being understood through the context as meaning any person or corporation in possession of the property and/or the vessel) agrees to carry to the destination of delivery as said destination. It understands, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier at all or any of said property, over all or any portion of said route to destination, and as to each party at any time intervening to carry any said property, that every party to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification as the type of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: <i>2/2/22</i>
Per: <i>Luis Castro</i>	Date: <i>2/2/22</i>

Mark with "X" or "700" if appropriate to designate hazardous materials (Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials). The use of this check is an optional method for identifying hazardous materials on Bills of Lading 49 CFR 172.201(a)(1) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement provided in 49 CFR 172.201(b) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Catherine Dubodreux</i>	Date: <i>2-25-22</i>

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81494-2D

TO: _____ FROM: _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70385
Phone: (337) 503-2168

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC
Street: 3144 PASSAYUNK AVE
EPA ID: PAD 040701 000
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	LA0000147272 (800) 330-2168
Acknowledgement of Receipt	
Per: <i>Joseph Conwell</i>	Date: <i>2/25/2022</i>

1740253
069

RECEIVED
DATE
TIME
BY
WEIGHTS
80620 G
31260 T
48760 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #

7108520

WEIGHED BY

053004

004494-2E

Bill of Lading (Page 1 of 2)

765589

DOCUMENT # 91484-2E

TO	
Comptone CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LAD00077201	
City/State/Zip: SULPHUR LA 70066	
Phone: (337) 503-2188	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 040791 008	
City/State/Zip: PHILADELPHIA, PA 19144	
Phone: (410) 234-1524	

ADDITIONAL INFORMATION	
VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.46(a) 1241	
Total 35607	

SUPPLIER'S INSTRUCTIONS	

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	48,800		UNM
			Type	Volume	
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 6 III (BENZENE) PROFILE: 869843LA IM CONTAINER# EPIU226SD7 RAIL CARN# EPIXB1404	CM	24.40	T
		ERG# 171 H059		NH	

RECEIVER agrees to the classification and title in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (number and content of packages unusual, marked container and destined as indicated) and destined as indicated above which said carrier (the word carrier being understood through the contract as including any person or corporation in possession of the property under the contract) agrees in carry to the usual place of delivery as said destination. If on the route, it is desired to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every invoice to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC		Carrier: CEX Railroad Corp	
Per: <i>[Signature]</i>	Date: <i>[Date]</i>	Per: <i>Lucia Castro</i>	Date: <i>2/2/22</i>

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations covering the transportation of hazardous materials. The use of this column is an approved method for identifying hazardous materials on Bills of Lading 49 CFR 171.15 (b) (1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification agreement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading, does apply. Unless a specific exemption from the requirements is provided in the Regulations for a particular material.

Designated Comptone: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Carrie Pemberton</i>	Date: <i>2-26-22</i>

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91484-2E

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777301
City/State/Zip: SULPHUR LA 70065
Phone: (337) 589-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3141 PASSYUNIKAVE
EPA ID: PA0 019781 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 238-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2189
Acknowledgement of Receipt	
Per: <i>Joseph [Signature]</i>	Date: 2/25/2022

79780 G
31100 T
48680 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SUI PHUR, LA 70665

RECEIVING TICKET # 265519

WEIGHED BY _____

009144-2F

10/23/15

265584

Bill of Lading (Page 1 of 2)

DOCUMENT # 01404-2F

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7470 JOHN BRANNON ROAD	
EPA ID: LAD00077201	
City/State/Zip: GULFBLUM, IA 50006	
Phone: (515) 681-2169	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PARSYUNIKAVE	
EPA ID: PAD 049701 008	
City/State/Zip: PHILADELPHIA, PA 19146	
Phone: (480) 228-1624	

ADDITIONAL INFORMATION
VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
<i>Titled 56021</i>

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARK & EXCEPTIONS	Type	Volume	UICM
X	1	RG, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B. II (DIENZENE) PROPN: 809843LA	GM	24.13	T
		IM CONTAINER# EPIU225226			
		RAIL CARD EPIK91494		11	
		ERG# 171 H038		NR	

48,260

RECEIVED subject to the classifications and limits in effect on the date of the form of this Bill of Lading, the property described above in respect to good order, except as noted (contents and condition of packages unknown, packed, consigned and delivered as indicated above which shipper certifies (the same having been understood through this contract) as amounting to any person or corporation in possession of the property under this contract) agrees to carry to the usual place of delivery as said destination. It is its policy, intention in effect by entering carrier on the terms as said destination is mutually agreed on to each carrier of all or any of such property, over all or any portion of said route to destination and on to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is lawfully in the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC		Carrier: CSX Railroad Corp	
Per: <i>[Signature]</i>	Date: <i>[Blank]</i>	Per: <i>Luis Castro</i>	Date: <i>2/3/22</i>

Note with "X" in "HAZ" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this option is an acknowledgment for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's and carrier's agreement is subject to section 172.201(c) of the Federal Regulations, as indicated on the Bill of Lading class apply, unless a specific exception from the requirements is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc		Certification of receipt of materials	
Per: <i>Cassie Emballeaux</i>	Date: <i>2-25-22</i>		

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 31494-2F

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULLY LA 70665
Phone: (337) 683-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PARSYUNIQUE
EPA ID: PA01049781096
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-1024

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Dennis Kearney</i>	Date: <i>2-25-20</i>

4-11-84

RECEIVED
MAY 11 1984

82740 G
34280 T
48460 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

105814

RECEIVING TICKET # _____

WEIGHED BY _____

Patrick Dauria

From: Doan, Janet <JDoan@wm.com>
Sent: Tuesday, March 29, 2022 10:21 AM
To: Patrick Dauria
Cc: Rhyne, John
Subject: EPIX 91085
Attachments: 91085.pdf

Good morning!
I hope you are having a wonderful day today 😊

Attached are BOLs and weight tickets for 91085.

5395 and 5383 were invoiced at solidification rate all others at solid rate

Thank you for your business.

JANET DOAN
Scheduling Coordinator
Gulf Coast Area
GulfCoastScheduling@wm.com
jdoan@wm.com



Main: 337.583.3700
Direct: 337.583.3745
7170 John Brannon Road
Sulphur, LA 70665



Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91085-3A

TO.....FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 503-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049781 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Vince Paul</i>	Date: <i>3-25-22</i>

(17668282000)

76360
34180

Net - 41180

11560 Net

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 11560

WEIGHED BY _____

0091085-3B

76del01

DOCUMENT# 91085-3B

TO
 Consignee: CHEMICAL WASTE MANAGEMENT Inc
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR LA 70865
 Phone: (337) 583-2169

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 088
 City/State/Zip: PHILADELPHIA, PA 19115
 Phone: (480) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
 Tickets 6/1/22

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. & III (BENZENE) PROFILE: 969843LA	GM	23.40	T
		IM CONTAINER# EPIU225395 RAIL CAR# EPIX61085			
		ERG# 171 H039		NH	

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and shipped as indicated above which shall carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agree to carry to the usual place of delivery as said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as in each order of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/18/2022
 Per: Luis Castro Date: 2/18/22

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Substances as defined to the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 49 CFR 171.15(a)(1) (B) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on our Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Delinda Spivey Date: 3/28/22

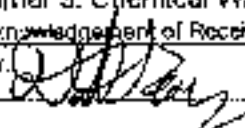
Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91085-3B

TO: _____ FROM: _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 048781 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc.	
LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: 	Date: 5-28-22

USCPRM17

TICKET 56

ID: 653975
GROSS WEIGHT 101800000
NET 3394 05/20/2022

ORIGINAL TICKET 56

GROSS	101800	LB	WEIGHED	80860 G
NET	3396	LB		33960 T
NET	46200	LB		49600 N
NET	23.45	TON		
DATE				05/20/2022

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 766661

WEIGHED BY _____

1.25

W11085-3C
7/6/22

053315

Bill of Lading (Page 1 of 2)

DOCUMENT# 91085-3C

TO

Consignee: CHEMICAL WASTE MANAGEMENT
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: 1A0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2188

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 225 1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
DEFINITION OF SOLID WASTE UNDER 40CFR
261.411 1241

Tobias Letts

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	LOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. 9.III (BENZENE) PROFILE: 889843LA	CM	24.33	T
		IM CONTAINER# EPIU225360 RAIL CAR# EPIX91085			
		ERG# 171 H039		NH	

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees in conformity to the usual place of delivery as said destination. If on its route otherwise to deliver to another carrier on the date of said destination it is mutually agreed on to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party in any time increased in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/18/2022
Per: *Luis Castro* Date: 2/18/22

Mark with "X" or "RD" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 37 CFR 201.201 (b) of 49 CFR 179. Code of Federal Regulations. Also when shipping hazardous materials, the shipper's certification statement provided in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
Certification of receipt of materials
Per: *Beunda Spicer* Date: *3/25/22*

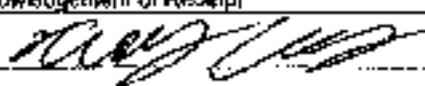
Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91085-30

TO: _____ FROM _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

Carrier 2: BNSF Railway Company Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169 Acknowledgement of Receipt	
Per: 	Date: 3-25-22

EP11225 560

10/20/00

TO: 053375
CLASS: 02000 10/000000
00:5000 05/25/2022

0000000 10/20/00 19

000000	02000 10	000000	82860 G
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000000	00000 10		48640 N
000000	05/25/2022		

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 74401

WEIGHED BY _____

1053315
 11/18/22 ON
 T160077

Bill of Lading (Page 1 of 2)

DOCUMENT # 91085-3D

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PA0 049781 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 220-1524

ADDITIONAL INFORMATION

WIRE TANK DOT FORMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Tickler 10/14/22

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WT
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. 9.11 (BENZENE) PROFITE: 869643LA	CM	24.13	T
		IM CONTAINER# EPIU225303			
		RAIL CAR# EPIX91085			
		ERG# 171 HD39		NH	

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route a destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/18/2022
 Per: *Luis Castro* Date: *2/18/22*

Mark with "X" or "RC" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1)(i) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the Shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirements is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Belinda Spicer* Date: *3/25/22*

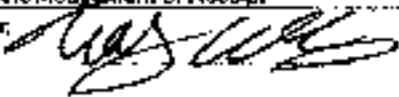
Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91085-30

TO _____ FROM _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-1524

Carrier 2: BNSF Railway Company Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc Acknowledgement of Receipt	
Per: 	Date: 3-25-22

EP1622220
TICKET 46

ID 653395
L4593 02390 1011850000
P:5814 05/25/2022

01160000 TICKET 46

05625	02390	10	RECYCLED	82380 G
084	3390	10		33960 T
081	40420	10		48420 N
081	26.21	100		
0529149	05/25/2022			

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 762077

WEIGHED BY _____

058155

0091085-3E

764089

Bill of Lading (Page 1 of 2)

DOCUMENT # 91085-3E

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC *JAC*

Street: 7170 JOHN BRANNON ROAD

EPA ID: LAD000777201

City/State/Zip: SULPHUR LA 70665

Phone: (337) 583-2100

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3144 PASSYUNKAVE

EPA ID: PAD 049791 098

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Tickets 11/1/21

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RC UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 8.III (BENZENE) PROFILE: 969843LA	CM	24.40	T
		IM CONTAINER# EPIU225272			
		RAIL CAR# EPIX9*085			
		ERG# 171 H039		NH	

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading. The property described above is apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If units route, otherwise to deliver to another carrier on the route to said destination it is mutually agreed as to such carrier of all or any of said property, over all or any portion of said route to destination and as to such party of any kind interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/18/2022

Per: *Luis Castro* Date: 2/18/22

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(5) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's classification statement, prescribed in section 172.203(a) of the Federal Regulations, as indicated on the Bill of Lading form apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Per: *Delinda Spicer* Date: *2/28/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91085-3E

TO-----FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: GULPHUR LA 70665
Phone: (337) 683-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC
Street: 5144 PASSYUNK AVE
EPA ID: PAD 048791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	
LAU000147272 (800) 386-2189	
Acknowledgement of Receipt	
Per: <i>Vernon K Paul</i>	Date: <i>3-28-20</i>

0111306000200000

79240 G
30760 T
48480 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 76257

WEIGHED BY _____

WESBY

0011085-3F

76082

Bill of Lading (Page 1 of 2)

DOCUMENT# 91085-3F

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD00077201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 683-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (440) 220-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

T. Dub

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 6. III (BENZENE) PROFILE: 888843LA	GM	24.40	T
		IM CONTAINER# EPIU225211			
		RAIL CAR# EPIX91085			
		ERG# 171 H039		NH	

RECEIVED subject to the classifications and labels in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination, if on the route, otherwise to deliver to another carrier on the route to said destination if it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interposed in all or any said property, that every service to be performed hereunder shall be subject in all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/18/2022 Per: *Luis Castro* Date: 2/18/22

Mark with "X" or "HC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(5) (a) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(b) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Date: *3/28/22*

Belma Spicer

Bill of Lading {Continuation Sheet} 2 of 2

DOCUMENT# B1085-3F

TO..... FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70865
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
For:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgment of Receipt:	
For: <i>Joseph Corralles</i>	Date: <i>3/25/2023</i>

EPIU 822011

TICKET 14

ID 65304
GROSS 80440 10180000
08:2000 05/28/2022

OUTBOUND TICKET 14

GROSS	80440 10180000	80440 G
TARE	31540 10	31540 T
NET	48900 10	48900 N
NET	24.45 TON	
REMARKS	OVCB 0727	

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7110082

WEIGHED BY _____

Patrick Dauria

From: Doan, Janet <JDoan@wm.com>
Sent: Monday, April 25, 2022 1:47 PM
To: Patrick Dauria
Cc: Rhyne, John
Subject: EPIX 91133-3
Attachments: 91133-3.pdf

Patrick,

91133-3^B, box 5290⁵²⁹⁵ was invoiced at the solidification rate.
91133-3C, box 5291 was overweight.

Thanks,

JANET DOAN

Scheduling Coordinator

Gulf Coast Area

GulfCoastScheduling@wm.com

jdoan@wm.com

Main: 337.583.3700

Direct: 337.583.3745

7170 John Brannon Road

Sulphur, LA 70665



053488 011133-3A 760250

Bill of Lading (Page 1 of 2)

DOCUMENT # 01133-3A

TO

Consignee: CHEMICAL WASTE MANAGEMENT Inc
 NO
 Street: 7170 JOHN BRANNON ROAD.
 EPA ID: LAD0007/7201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 5144 PASSYUNK AVE
 EPA ID: PAO 049791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 220-1524

ADDITIONAL INFORMATION

VRE TANK HOT TOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.11(a) 1241

Tried to call 36

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WT
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9.III (BENZENE) PROFILE, 988843LA	CM	21.50	T
		IM CONTAINER# EPIU225190			
		RAIL CAR# EPIX01133			
		ERG# 171 H039		NEE	

RECEIVED subject to the classification and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and delivered as indicated above which said carrier (the which carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on the route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier at all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions as the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/18/2022
 Per: *Luis Castro* Date: 2/18/22

Mark with "X" or "RC" if appropriate in designate hazardous materials. Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 49 CFR 171.15 (b) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.904(a) of the Federal Regulations, as in force on the Bill of Lading does not apply unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management Inc Certification of receipt of materials

Per: *Belinda Spicer* Date: *4/5/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91133-3A

TO _____ FROM _____

Consignee: CHEMICAL WASTE MANAGEMENT <i>INC</i> INC
Street: 7176 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PA01048791098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Vernon Paul</i>	Date: <i>7-4-22</i>

2171 203170

TICKET 38

IN
LADIES
WEIGHT
45 3480
48 3480
49 3480
50 3480
51 3480
52 3480
53 3480
54 3480
55 3480
56 3480
57 3480
58 3480
59 3480
60 3480

12080
30440

42520

42520

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 72050

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

1053504 UM1133-00 200254

DOCUMENT # 91133-3B

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD006777201
 City/State/Zip: SULLYHUR, LA 70685
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAU 048791 09B
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (481) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 251.4(a) 1241

Ticket 60137

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) PROFILE: 989843LA	CM	22.05	T
		IM CONTAINER# GPIU225295			
		RAIL CAR# EPX91133			
		ERG# 171 N039		NA	

RECFMDD subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (marks and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as sold (as follows). If on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in or on any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/18/2022 Per: *Luis Castro* Date: 2-18-22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 372.204(a)(1)(6) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per: *[Signature]* Date: 4-5-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91133-3D

TO _____ FROM _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M S.L.C.
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (410) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
Per: <i>Coly Smith</i>	Date: <i>4-5-22</i>

Ex 9 14-2-25 110
TICKET 50

IP 653504
SERIES 74750 URBANBOUND
ORIGINATION 06/05/2002

INDUSTRIAL TIGHT 50
plus 1000 lb SPECIAL FB 71880 G
plus 5000 lb 31040 T
plus 2000 lb 43840 N
50 1000 lb
plus 1000 lb

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

760254

RECEIVING TICKET # _____

WEIGHED BY _____

058315 UM133-3C
766259

Bill of Lading (Page 1 of 2)

DOCUMENT # 91133-3C

TO
 Consignee: CHEMICAL WASTE MANAGEMENT, INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR, LA 70685
 Phone: (337) 583-2169

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PA0 049781 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1624

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
 Ticket UM133

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	MOVS
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9.III (BENZENE) PROFILE: 889843LA	CM	23.88	T
		IM CONTAINER# EPIU225291			
		RAIL CAR# EPIX91133			
		ERG# 171 H03B			NR

RECEIVED subject to the declarations and tariffs in effect on the date of this Bill of Lading, the property described herein is apparent good order, except as noted (damages and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as indicated, if en route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Rules of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/18/2022
 Per: *Luca Castro* Date: 2/18/22

Mark with "X" or "RQ" if appropriate in designate Hazardous Materials Substances as defined by the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1)-(4) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Brenda Spicer* Date: 4/9/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91133-30

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC <i>INC</i>
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SLIPFUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049701 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: 4-5-22

L114 20.30.11

TICKET 24

ID 653375
GROSS 82700 10148OUND
NET 47540

OUTFILED TICKET 24

GROSS 82200 10 RECALLED
TARE 34660 10
NET 47540 10

NET 25.97 TON

DATE 04/05/2022

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 766059

WEIGHED BY _____

1007

001133-30 766232

DOCUMENT # 91133-30

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANFON ROAD
 EPA ID: LAD000777204
 City/State/Zip: SULPHUR LA 70865
 Phone: (337) 583-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 5144 PASSYUNK AVE
 EPA ID: PAD 049791 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRF TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Telata 6/13/22

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 959843LA	CM	22.70	T
		IM CONTAINER# EPIU225042			
		RAIL CAR# EPIX91133			
		ERG# 171 H039		NH	

RECEIVED subject to the classification and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated herein which said carrier (the word carrier being understood through this contract to mean any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery or said destination. If on its route, alternative to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of it or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every consignment to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CRX Railroad Corp
 Per: *[Signature]* Date: 2/18/2022
 Per: *Luis Castro* Date: 2/18/22

Mark with "X" or "NH" as appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (i) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement required in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc. Certification of receipt of materials
 By: *Belinda Spicer* Date: *4/4/20*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91133-3D

TO: _____ FROM: _____

Consignee: CHEMICAL WASTE MANAGEMENT INC <i>Inc</i>
Street: 7176 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70965
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 048791 098
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (410) 238-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: <i>9.4.22</i>

(P 114 43 2072

TICKET 27

10 65375
GENCO 78260 UH000000
SULPHUR, LA 70665

WEIGHT LIST 27

WT	100.0 lb	WEIGHTED	78260 G
WT	200.0 lb		34840 T
WT	300.0 lb		43420 N
WT	21.71 100		
WT	100.00		100.00

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 714232
WEIGHED BY _____

053504

WHITSON

760246

Bill of Lading (Page 1 of 2)

DOCUMENT# 91133-3E

TO

Consignee: CHEMICAL WASTE MANAGEMENT Inc

Street: 7170 JOHN BRANNON ROAD

EPA ID: LAD300777201

City/State/Zip: SUPLIUR LA 70666

Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3114 PASSYUNKAVE

EPA ID: PAD 049791 098

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (440) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 6/1/20

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9, III (BENZENE) PROFILE: 969843LA IM CONTAINER# CPIU225267 RAIL CAR# EPIK31133 ERG# 171 H039	COM	20.85	T

RECEIVED subject to the classifications and (with it) effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as set destination, if on its route, otherwise to deliver to another carrier on the route to said destination. If it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any line interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Per: [Signature] Date: 2/18/2022

Per: Luis Castro Date: 2/18/22

Mark with "X" or "AQ" if appropriate to designate Hazardous Materials Solutions as defined in the Department of Transportation Regulations governing the transport of hazardous materials. The use of this column is optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as provided on the Bill of Lading does apply, unless a specific exception from the regulation is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Per: Belinda Spicer Date: 4/4/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91133-3T

TO _____ FROM _____

Consignee: CHEMICAL WASTE MANAGEMENT INC <i>INC</i>
Street: 770 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 503-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 049781 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (410) 228 1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Rec:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2189	
Acknowledgement of Receipt	
Rec: <i>WJ</i>	Date: <i>4-4-22</i>

E 114-2-2267

TRUCK #

11 057504
05/28/73026 05/28/0110
01-0000 01-04-2002

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0000	0000	00	000000	73020 G
0000	0000	00	000000	31280 T
0000	0000	00	000000	41740 N
00	0000	000		
000000	000000	0000	0000	

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7100246
WEIGHED BY _____

15/11/22

W11105-01

Bill of Lading (Page 1 of 2)

76023

DOCUMENT # 91133-3F

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LADK00777201	
City/State/Zip: SULPHUR LA 70665	
Phone: (337) 583-2169	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS RBM LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 048784 898	
City/State/Zip: PHILADELPHIA, PA 19140	
Phone: (480) 278-1624	

ADDITIONAL INFORMATION	
VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(h) 1241	
Tide letter	

SHIPPER'S INSTRUCTIONS	

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Units
X	1	REG. UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 5608431A IM CONTAINER# 88002533 EP10225233 L.C. RAIL CAR# EPIX91133 CRG# 171 F03B	CM	21.15	T
				NH	

RECEIVED subject to the classification and labels in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. It on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over and over any portion of said route to destination and as to each party of any time interested in all or any of said property, that every service to be performed hereunder shall be subject in all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS RBM LLC		Carrier: CSX Railroad Corp	
Per:	Date: 2/18/2022	Per: Luis Castro	Date: 2/18/22

Mark with "X" or "NO" if appropriate to designate hazardous materials substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1)(ii) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(b) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc		Certification of receipt of materials	
Per: Belinda Spricer	Date: 4/4/22		

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# B1133-3F

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
Per: <i>Vernon V. Paul</i>	Date: <i>4-4-20</i>

EP1423252

TICKET 26

TO: 64548B
FROM: 64570 IN (10/01/80)
DATE: 06/01/80

CONTAINER TYPE			
TYPE	QTY	IN	WEIGHT
64570	10	IN	72420 G
64570	10	IN	30700 T
64570	10	IN	41720 N
TOTAL			
64570	30	IN	

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN RHANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 714231

WEIGHED BY _____

Patrick Dauria

From: Doan, Janet <JDoan@wm.com>
Sent: Monday, April 25, 2022 1:28 PM
To: Patrick Dauria
Cc: Rhyne, John
Subject: 91063-3
Attachments: 91063-3.pdf

All solid
91063-3A, 91063-3B, 91063-3D & 91063-3E were overweight.

JANET DOAN

Scheduling Coordinator

Gulf Coast Area

GulfCoastScheduling@wm.com

jdoan@wm.com

Main: 337.583.3700

Direct: 337.583.3745

7170 John Brannon Road

Sulphur, LA 70665



Recycling is a good thing. Please recycle any printed emails.

103010

009105-011
103014

Bill of Lading (Page 1 of 2)

DOCUMENT# 91003-3A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC *JMC*
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049701 008
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (440) 226-1524

ADDITIONAL INFORMATION

VRF TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a)1241

Ticket Cell 28

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WTM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S., 9. III (BENZENE) PROFID: 969R43LA	CM	24.05	T
		IM CONTAINER# EPIU225145			
		RAIL CAR# EPIX91083			
		ERG# 171 11089			

RECEIVED subject to the disclaimers and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under this contract) agrees to carry to the usual place of delivery as said destination, from its route, otherwise to deliver in another carrier or the route to said destination. This is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time increased in all or any said property, that every carrier to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/18/2022
 Per: *Luca Castro* Date: *2/18/22*

Mark with "X" or "RD" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (U) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(g) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Originated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

Per: *Belinda Spicer* Date: *4/10/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91053-3A

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777261
City/State/Zip: SULPHUR LA 70665
Phone: (337) 563-2169

Inc

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 0497B1 090
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LAD000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Vernon K Pany</i>	Date: <i>4-6-22</i>

E 1142221916

TRUCK #

TO (504) 638-3100
6383 S. W. (504) 638-3100
11-1-90 638-3100

DESCRIPTION	UNIT	WT
...	...	03880 G
...	...	35250 T
...	...	48400 N
...	...	
...	...	

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 760304

WEIGHED BY _____

103315

WILKINS-SD

766327

Bill of Lading (Page 1 of 2)

DOCUMENT # 91063-38

TO

FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70865
 Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (484) 278-1324

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.46(d) 1241
 Ticks 6/129

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL NO. SHIPPING UNITS DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS Type Volume UOM

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. II (ARZENITE) PROFILE: 9698431.A	GM	24.40	T
		IM CONTAINER# EPIU225133			
		RAIL CAR# EPIX91083			
		ERG# 171 H039		NFL	

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the properly described above in apparent good order, weight as noted (contents and condition of packages unknown), packed, contained and delivered as indicated above with said contents (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/18/2022 Per: Luis Castro Date: 2/18/22

Mark with "X" or "AQ" as appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials
 By: Belinda Spicer Date: 4/7/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91003-38

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT <i>Inc</i> INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 643-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Debra Jones</i>	Date: <i>4-7-22</i>

C-161-19433
TIGHT V.

635525
03925 83480 1014480130
03148001 09-09-2002

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03148001	100000	10	34480 T
03148001	100000	10	49000 N
03148001	100000	10	
03148001	100000	10	

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 146307

WEIGHED BY _____

W2504

WHL050760277

Bill of Lading (Page 1 of 2)

DOCUMENT# 91063-JC

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 2170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 0497B1 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (410) 228-1524

ADDITIONAL INFORMATION

WIRE TANK BCF TONS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 6/130

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNIT
X	1	RC UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.III (BENZENE) PROFILE: 989843LA IN CONTAINER# FPIU225334 RAIL CAR# EPIX91083 ERG# 171 H039	CM	23.30	T
			NA		

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the properly described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and destined as indicated above which said carrier (who would confer being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in it or any such property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i> Date: 2/18/2022	Per: <i>Luis Castro</i> Date: 2/18/22

Mark with "X" or "RD" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201 (a)(1) (b) of title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 177.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Belinda Spicer</i>	Date: <i>4/6/22</i>

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91053-30

TO: _____ FROM: _____

Consignee: CHEMICAL WASTE MANAGEMENT Inc
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70865
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PA0049781098
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (484) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 335-2189	
Acknowledgement of Receipt	
Per: <i>Chris O'Neil</i>	Date: <i>4-5</i>

C1140000001

TICKET 5

To: 857966
60155 78940 (3-11150112)
BY: JRG 01/06/2022

TITANIUM TITEL		5
gross	Weight in POUNDS	78340 G
tare	Weight in	30740 T
net	Weight in	48100 N
net	Weight in	
net	Weight in	

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7600277

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

WILKINS-SUN
THERIA

17:18

DOCUMENT # 91063-3D

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 503-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 058
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 798-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) (24)

Ticks 61131

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	DOT SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Code
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S., 9.11 (BENZENE) PROFILE: 969543LA	GM	23.23	T
		IM CONTAINER# EPIX225322			
		RAIL CAR# EPIX81053			
		ERG# 171 H036	NH		

RECEIVED subject to the classifications and (title in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (own word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to (its usual place of delivery as said description, if on its route, otherwise to deliver to another carrier on the route to said destination, if it mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any line traversed in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions to the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions to the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/18/2022
 Per: Luis Castro Date: 2/18/22

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201 (a)(1) 44 of Title 49, Code of Federal Regulations, Also, when shipping hazardous materials, the shipper's certification statement, prescribed in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Belinda Spicer Date: 4/10/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81063-3D

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD300777201
City/State/Zip: SUITPHUR LA 70866
Phone: (337) 583-2189

Inc

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049791 093
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
For:	Date:
Carrier 3: Chemical Waste Management, Inc	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
For: <i>VERNOG K. PAUL</i>	Date: <i>4-5-22</i>

2170 0011

TICKET 6

10 85379a
HEPES H3700 164107410
115781 04 06 2022

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38240 T
45660 N

17
11/11/22

L15660

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70885

RECEIVING TICKET # 1106279

WEIGHED BY _____

0041003-3E 166312

Bill of Lading (Page 1 of 2)

153315

DOCUMENT# 51063-3E

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000771201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2168

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3544 PASSYUNKAVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (440) 228 1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Texas 16132

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NU SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WGT
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 8, III (BENZENE) PROFILE: 969843LA	CM	23.28	T
		IM CONTAINER# EPIL225052			
		RAIL CAR# EPIX91063			
		ERG# 171 H039			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, re-stamped and weighed as indicated above when said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under this contract) agrees to carry to its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination it is mutually agreed as to each carrier of all or any of said property, then all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/18/2022
 Per: Lucia Castro Date: 2/18/22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined by the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (ii) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(e) of the Federal Regulations, as indicated on the Bill of Lading (see app), unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

[Signature] Date: 4/6/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91063-3E

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN DRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 040791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (EOD) 338-2169
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: 4-6-22

E (1142250)2
TICKET NO

SPRINGER BYOND INTERNATIONAL
DATE: 04/05/2000

RECEIVED TICKET		Lot
Scale	83200 G	
Net	34700 T	
Gross	48500 N	
DATE: 04/05/2000		
WEIGHED BY: _____		

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 2600312

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

DOCUMENT# 91063-3F

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SU PHUR LA 70806
Phone: (337) 523-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3141 PASSYUNK AVE
EPA ID: PAO 040791 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(b) 1244
<i>Tickets 11133</i>

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UN
X	1	RO, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 9898431A	CM	23.1B	T
		IM CONTAINER# EPIU225243			
		RAIL CAR# EPIX91081			
		ERG# 171	HA		

RECEIVED subject to the classifications and labels in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, counted and drained as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of this property under the contract) agrees to carry to its usual place of delivery or such destination. If en route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time involved in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and its associated terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Part: *[Signature]* Date: 2/18/2022 Per: *Luis Castro* Date: 2-18-22

Mark with "X" or "ND" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(4) (b) of title 49, Code of Federal Regulations, also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(e) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials
 By: *Carrie Embodaux* Date: 2-18-22

Bill of Lading (Page 1 of 2)

766309

DOCUMENT # 91063-3F

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LAD00077201	
City/State/Zip: SULPHUR LA 70665	
Phone: (337) 583-2169	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 048791 098	
City/State/Zip: PHILADELPHIA, PA 19146	
Phone: (480) 228-1524	

ADDITIONAL INFORMATION
VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a)(24)
<i>John Will 33</i>

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.III (BENZENE) PROFILE: 969043LA	CM	23.18	T
		IM CONTAINER# EPIU225243			
		RAIL CAR# EPX91053			
		ERG# 171 H039	NH		

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading. The property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If any route, otherwise to deliver to another carrier or the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC		Carrier: CSX Railroad Corp	
Per: <i>[Signature]</i>	Date: 2/18/2022	Per: <i>Luis Castro</i>	Date: 2-18-22

Mark with "X" or "RD" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials as cited in Lading 172.201(a)(1)(4)(i) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(p) of the Federal Regulations, as indicated on the Bill of Lading does apply unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
<i>Carrie Embrockaux</i>	Date: 2-18-22

E11422381

DATE

12 06/2002
CITY: 71400 (SULPHUR)
STATE: LA 70685

RECEIVED FROM

4000	5100	6000	71420 G
000	0000	00	31040 T
00	0000	00	40380 N
000	0000	000	
00000	00000	00000	

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

766306

RECEIVING TICKET # _____

WEIGHED BY _____

Patrick Dauria

From: Doan, Janet <JDoan@wm.com>
Sent: Monday, March 28, 2022 9:18 AM
To: Patrick Dauria
Cc: Rhyne, John
Subject: EPIX 91058
Attachments: 91058.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

 APPROVED

BOLs and weight tickets attached for EPIX 91058.
All will be invoiced at solid rate.
Overweight charges will apply for boxes listed below:
5077
5110
5003 12574
5161

Thank you for your business!

JANET DOAN
Scheduling Coordinator
Gulf Coast Area
GulfCoastScheduling@wm.com
jdoan@wm.com

Main: 337.583.3700
Direct: 337.583.3745
7170 John Brannon Road
Sulphur, LA 70665



WESB 815

UN3077 2A
746053

Bill of Lading (Page 1 of 2)

DOCUMENT # 91058-2A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULLY, PA 15066
 Phone: (337) 553-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 CPA ID: PAD 049791 008
 City/State/Zip: PHILADELPHIA, PA 19149
 Phone: (440) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 61400

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RD UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 8. III (BENZENE) PROFILE: 9890431A IM CONTAINER# EPIU225077 RAIL CAR# EPIX01058 ERG# 171 H039	CM	24.36	T

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), material consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery or final destination. If on its route, it is unable to deliver to regular carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to discharge and as to each party of any line interested in all or any said property that every service to be performed hereunder shall be subject in all the Bill of Lading terms and conditions to the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

For: *[Signature]* Date: 2/23/2022
 Per: *Luis Castro* Date:

Mark with "X" or "NCP" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.301(a)(1) of 49 CFR 172.301(a)(1) of the Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.304(a) of the Federal Regulations, as indicated on the bill of lading does apply, unless a specific exception from this requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

Per: *Belinda Spitzer* Date: *3/10/12*


Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91058-2A

TO ... FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SUITPHUR LA 70665
Phone: (337) 583-2109

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD-049791-098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LAD000147272 (800) 338-2189	
Acknowledgement of Receipt	
Per: 	Date: 3.24.25

LFM 24 2011

TICKET #0

TO 45395
GROSS 8520 10000000
NET 4510 03/24/2002

000000 TICKET #0

GROSS	8520	10000000	83620 G
NET	4510	10	34480 T
NET	4510	10	49140 N
NET	2555	100	
03/24/02		03/24/2002	

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____ 766033

WEIGHED BY _____

153/18
 Bill of Lading (Page 1 of 2)

DD91058-015

766054

DOCUMENT# 91058 2B

TO
 Consignee: CHEMICAL WASTE MANAGEMENT
 INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR LA 70685
 Phone: (337) 583-2168

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3140 PASSYUNK AVE
 EPA ID: PAD 049701 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 226-1524

ADDITIONAL INFORMATION
 VRI: TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.416 1241

SHIPPER'S INSTRUCTIONS

Ticket 61401

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	TYPE	VOLUME	UNIT
X	1	RO UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. III (BENZENE) PROFILE: 96UR43LA IM CONTAINER# EPIU222371 RAIL CAR# EPIX81056 ERG# 171 H03B	CM	24.40	T
					NP

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above as apparent and order, except as noted (contents and condition of packages unknown), marked consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If carrier's route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as in each carrier of all or any of said property, over all or any portion of said route to best route and as to each party at any time interested in said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions. Shipper hereby certifies that this is familiar with all the Bill of Lading terms and conditions in

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/23/2022
 Per: Luis Castro Date: 2-23-22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49 Code of Federal Regulations, also, when shipping hazardous materials, the shipper's affirmative statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirements is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Brenda Spice Date: 3/22/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91058-2R

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7570 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 563-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 049791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (410) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, inc	
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: <i>3-24-20</i>

LA0000147272 (800) 336-2169

79210 G
30260 T
48980 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

00911058-20
766018

DOCUMENT # 91058-20

TO
 Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAB300777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2169

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAC 048781 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a)1241
 Ticket 61402

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXEMPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. & H (BENZENE) PROFILE: 0698431 A IM CONTAINER# EPIU226317 RAIL CAR# FPIX91058 ERG# 171 H039	CM	24.35	1
				NA	

RECEIVED subject to the classification and tariffs in effect on the date of the issue of this bill of lading. The property described above is apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If en route, whenever it follows another carrier on the route to said destination, it is mutually agreed as to each portion of all or any of said property, over all or any portion of said route in destination and as to each party of any firm interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/23/2022
 Per: Luis Castro Date:

Mark with "X" or "RQ" if applicable to Certain Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (1) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as included on the Bill of Lading copy apply, unless a specific exception from the regulations is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Belinda Spicer Date: 3/24/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91058-2G

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SUJ. PHUR LA 70595
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
For:	Date:
Carrier 3: Chemical Waste Management, Inc	LAD000147272 (800) 336-2169
Acknowledgement of Receipt	
For: <u>Vernon & Paul</u>	Date: <u>3-24-22</u>

794-10 G
30800 T
48640 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____

WEIGHED BY _____

053504 0091058-2D 7/6/05

Bill of Lading (Page 1 of 2)

DOCUMENT # 91058-2D

TO
 Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SUI PHUR LA 70669
 Phone: (537) 583-2169

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 048791 090
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION
 VRC TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
 Includes 61403

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. S.III (BENZENE) PROFILE: 889843LA	CM	24.40	T
		IM CONTAINER# EPIU225110			
		RAIL CAR# FPIX91058			
		ERG# 171 H039		NH	

RECEIVED subject to the classification and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is presented in good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. It is hereby agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/23/2022
 Per: Luis Castro Date:

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulation governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1)(ii) of the Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's Certification Statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Belinda Spicun Date: 3/24/20

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81058-2D

TO..... FROM.....

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PA0049791098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc.	
LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Joseph Conley</i>	Date: <i>3/27/2022</i>

1 P1622 5110

EXEY 44

TO 65304
GROSS 80240 TD 1000000
TARE 48580 05/24/2002

000000 10000 44

4405	80240 TD	80240 G
129	31660 TD	31660 T
41	48580 TD	48580 N
81	24,290 Del	
05/24/02	05/24/2002	

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 740057

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

0091058-2E

766062

DOCUMENT # 91058-2E

TO
 Consignee: CHEMICAL WASTE MANAGEMENT Inc
 INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70685
 Phone: (337) 583-2169

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 2114 PASSYUNKAVE
 EPA ID: PA0 049791 090
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 228-1624

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.4(a) 1241
 Ticks 61404

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 0898431A IM CONTAINER# EPIU225003 RAIL CAR# EPIX91058	GM	24.43	T
		ERG# 171 H030			N/A

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading. The property described above in apparent good order, except as noted (contents and condition of packages unknown), received, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier or the route to said destination it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time requested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Per: *[Signature]*
 Date: 2/23/2022

Carrier: CSX Railroad Corp
 Per: Luis Castro
 Date: 2/23/22

Mark with "X" or "TC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.203(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(j) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided by the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Per: Belinda Spicer

Certification of receipt of materials
 Date: 3/25/22

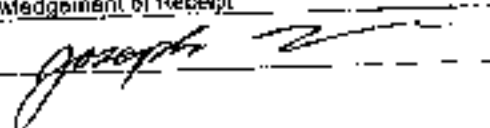
Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91058-2F

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70605
Phone: (337) 543-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 096
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Corner 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
Per: 	Date: 3/25/2022

EPH11223033

0001 20

TO: ZENON
ADDRESS: 00000 301000000
0011000 03/25/2007

000000-11000 20

00025	00390	10	000000	80800 G
LABL	31660	10		31660 T
001	49140	10		49140 N
001	00000	000		
111100			05-25-2007	

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 740060

WEIGHED BY _____

Wobbs

0011008-011-7660004

Bill of Lading (Page 1 of 2)

DOCUMENT # 91058-2F

TO	
Consignee: CHEMICAL WASTE MANAGEMENT <i>Inc</i>	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LAU000777201	
City/State/Zip: SULPHUR LA 70664	
Phone: (337) 583-2169	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 048791 090	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 228-1524	

ADDITIONAL INFORMATION
VRC TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
<i>Jobs 61405</i>

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	LCMB
X	1	RO, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.III (BENZENE) <i>PROFILE: 969843LA</i>	DM	24.1B	T
		IM CONTAINER# EPI1025161			
		RAIL CAR# EPIX91053			
		ERG# 171 H039		<i>NH</i>	

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of the Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and described as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination, if on its route, otherwise to deliver to another carrier on the route to said destination, who is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Per: <i>Luis Castro</i>
Date: 2/23/2022	Date: 2/23/22

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirements is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc.	Certification of receipt of materials
Per: <i>Belinda Spicer</i>	Date: <i>3/25/22</i>

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91058 21-

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SLU. PHUR, LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 0497B1 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Mark Paul</i>	Date: <i>3-25-22</i>

EPUSA 5/6/1
TOTAL 22

30 653156
68003 83140 161100098
05/25/2022

05/25/2022 22

68003	83140	161100098	83140 G
68003	34900	161100098	34900 T
68003	48240	161100098	48240 N
68003	26112	161100098	
68003		161100098	05-25-2022

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7660661
WEIGHED BY _____

Patrick Dauria

From: Doan, Janet <JDoan@wm.com>
Sent: Monday, March 28, 2022 9:16 AM
To: Patrick Dauria
Cc: Rhyne, John
Subject: EPIX 91475
Attachments: 91475.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

 APPROVED

Good morning Patrick,
Please see attached BOLs and weight tickets for EPIX 91475.
All will be invoiced at solid rate.
Overweight charges of \$125.00/ea apply to the following boxes:
5058
5207
5180 $5 \times 125 = 625$
5236
5283

Thanks and Have a Great Day!

JANET DOAN
Scheduling Coordinator
Gulf Coast Area
GulfCoastScheduling@wm.com
jdoan@wm.com

Main: 337.583.3700
Direct: 337.583.3745
7170 John Brannon Road
Sulphur, LA 70665



Recycling is a good thing. Please recycle any printed emails.

153188

004115-011

765991

Bill of Lading (Page 1 of 2)

DOCUMENT# 91475-2A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2108

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 090
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 61910

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. 9.III (BENZENE) PROFILE: 980843LA	CM	24.40	T
		IM CONTAINER# EPIJ225304			
		RAIL CAR# EPIX91475			
		ERG# 171 H030			

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading. The property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. If it is mutually agreed as to each car or all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: 2/23/2022
Per: <i>Luis Castro</i>	Date:

Mark with "X" or "RD" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(b) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Beverly Spicer</i>	Date: <i>3/23/22</i>

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91475-2A

TO FROM

Consignee CHEMICAL WASTE MANAGEMENT INC
Street: 717D JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70666
Phone: (337) 583-2159

Shipper PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PA0 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: <u>Vernon K Paul</u>	Date: <u>3-23-22</u>
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 333-2169
Acknowledgement of Receipt	
Per: <u>Vernon K Paul</u>	Date: <u>3-23-22</u>

79600 G
30700 T
48900 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BHANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # _____

WEIGHED BY _____

053504

00011475-2B

Bill of Lading (Page 1 of 2)

7660013

DOCUMENT # 91475-2B

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA000077201
 City/State/Zip: BULPHUR LA 70385
 Phone: (337) 585-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Teddy 2/21/22

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Unit
X	1	RG, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 8.11 (BENZENE) PROFILE: 969843LA IM CONTAINER# EPIU225058 RAIL CAR# EPIX01475 ERG# 171 H039	CM	24.35	T

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading. The property described above is apparent, good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. It is its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the end terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 2/23/2022
 Per: *Luis Castro* Date: 2/23/22

Mark with "X" or "HQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an official method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (a) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Catherine Dubouché* Date: *3-24-22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91475-2R

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0009777201
City/State/Zip: SULPHUR LA 70885
Phone: (337) 583-2109

TO	FROM
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNKAVE	
EPA ID: PAD 049781 098	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 228-1524	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 335-2169	
Acknowledgement of Receipt	
Per: <i>Joseph C.</i>	Date: <i>7/29/2022</i>

EPI 000000

TICKET 15

TO: 65204
FROM: 00640-101000000
001: 5671 05/25/2022

ORIGINAL TICKET 15

4000	00640-10-RECEIVED	80640 G
1000	00640-10	31840 T
050	00640-10	48800 N
050	00640-100	
001: 5671	05/25/2022	

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #

1100013

WEIGHED BY _____

UM1479-217105984

Bill of Lading (Page 1 of 2)

DOCUMENT# 91475-20

TO
 Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70885
 Phone: (337) 583-2168

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PA0 049781 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (440) 278-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
 Tubes 61452

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	FROM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) PROFILE: 088843LA IM CONTAINER# EPIU225707 RAIL CAR# EPIX01475 ERG# 371 H038	CM	24.40	T

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through bill of lading contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as such destination. If on its route, otherwise to deliver to another carrier on the route to said destination it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party if any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: _____ Date: 2/23/2022
 Per: Luis Castro Date: _____

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column as an optional method for identifying hazardous materials on Bills of Lading 49 CFR 172.201(a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of material
 Per: Blunda Spicer Date: 3/23/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91475-2C

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70865
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASBYUNICAVE
EPA ID: PA0 049791 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 278-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Joseph Courtville</i>	Date: <i>3/23/2022</i>

80080 G
31580 U
48500 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 469151

WEIGHED BY _____

153315

0041175-20

765990

Bill of Lading (Page 1 of 2)

DOCUMENT # 91475-20

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SLUSHUR LA 70865
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PAD048791099
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (484) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Tanks 61413

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	COM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. 9.111 (BENZENE) PROFILE: 96843LA IM CONTAINER# EPIU225180 RAIL CAN# EPIXB1475	GM	24.33	1
		ERG# 171 11039		NH	

RECEIVED subject to the classification and liability in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the way to said destination, it is mutually agreed as to each carrier at all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of effect. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 2/23/2022
 Per: *Luis Castro* Date: *[Blank]*

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1)(B) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper certifies on statement prescribed hereon 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply. Unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Belinda Spicer* Date: *3/23/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91475-2D

ID _____ FROM _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0009777201
City/State/Zip: ST. JLPHUR LA 70665
Phone: (337) 583 2109

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 049781 086
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1574

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2189
Acknowledgment of Receipt	
Per: <i>Derrick L. Gray</i>	Date: <i>3-23-22</i>

83700 G

35040 C

48660 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 1001111

WEIGHED BY _____

1603315
 Bill of Lading (Page 1 of 2)

0091475-2E

760017

DOCUMENT# 91475-2E

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SUICHR LA 70685
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 60144

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPMENTS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 909843LA 1M CONTAINER# EPIU225236 RAIL CAR# EPIX91477 ERG# 175 H039	CM	24.33	T
				NA	

RECEIVED subject to the demurrage and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, assigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If en route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that such service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that no a familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/23/2022
 Per: Luis Castro Date:

Mark with "X" or "OC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172 201(a)(1) (b) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification is relevant prescribed in section 172 201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Belinda Spencer Date: 3/23/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91475-2E

TO: _____ FROM: _____

Consignee: CHEMICAL WASTE MANAGEMENT INC.
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 040791 099
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 228-1524

Carrier 2: DNSF Railway Company	
Acknowledgement of Receipt	
For:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA000014/2/2 (800) 336-2169
Acknowledgement of Receipt	
For: <i>Derrick H. Gray</i>	Date: <i>3-24-22</i>

E114 222236

PAGE 18

TO: 65379
GROSS WEIGHT: 49000
NET WEIGHT: 35060

SHIPPING WEIGHT: 49

GROSS	49000 LB	84060 G
NET	35060 LB	35060 T
WT	49000 LB	49000 N
WT	35.50 TON	
DATE	05/24/2002	

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 761017

WEIGHED BY _____

153504 001415-247 66007

Bill of Lading (Page 1 of 2)

DOCUMENT # B1476-2F

TO

Consignee: CHEMICAL WASTE MANAGEMENT
 INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 683-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 226-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.4(a)1241

Treat LHMIS

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UDM
X	1	RG, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B.L. (BENZENE) PROFILE: 069843LA IM CONTAINER# EPIU226283 RAIL CAR# EPIX014785	CM	24.40	T
		ERG# 171 HD39		MH	

RECEIVED subject to the classifications and to the in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (quantity and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver in smaller carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time injured in all or any said property, that every service to be rendered hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Date: 2/23/2022
 Per: Luis Castro

Mark with "X" or "RCF" appropriate to designate Hazardous Materials References as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (4) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement as described in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Belinda Spicer
 Date: 3/23/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# B1475-2F

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7179 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 563-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Joseph</i>	Date: 3/27/2022

80460 G
31560 T
48900 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70885

RECEIVING TICKET # _____

WEIGHED BY _____

152188 0091075-2A (66022)

Bill of Lading (Page 1 of 2)

DOCUMENT# 31075-2A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC

Street: 7170 JOHN BRANNON ROAD

EPA ID: LAD000777201

City/State/Zip: SULPHUR LA 70665

Phone: (337) 583-2188

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3744 PASSYUNK AVE

EPA ID: PAD 048791 008

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (410) 228-1574

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Includes 61385

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	Weight
X	1	RO, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B, III (BENZENE); PROFILE: 989643LA	CM	24.10	T
		IM CONTAINER# EPIU225190			
		RAIL CAR# EPIX91075			
		BRG# 171 H099		NA	

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination, if on its route, otherwise to deliver to another center on the route to said destination, if it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route in destination and as to each party at any time interlined in or on any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/23/2022

Per: *Luis Castro* Date: *2/23/22*

Mark with "X" or "H" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bill of Lading 172.201(a)(7) of Title 49, Code of Federal Regulations, also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(e) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Belinda Spicer Date: *4/1/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81076-2A

TO: _____ FROM: _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNICAVE
EPA ID: PAD 049791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LAD000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Vank Paul</i>	Date: <i>4-1-22</i>

79360 G
30460 T
48900 N

CHEMICAL WASTE MANAGEMENT, INC
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # *11110.221*

WEIGHED BY _____

155504 0041015-2B 766224

Bill of Lading (Page 1 of 2)

DOCUMENT# 91075-2B

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3146 PASSYUNICAVE
 EPA ID: PAD 040791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRF TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 101586

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UNIT
X	1	RQ, UNSD77, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) PROFILE: 069843LA	GM	24.33	T
		IM CONTAINER# EPIU225263			
		RAIL CAR# EPIX91075			
		ERC# 171 HDSB		171	

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), packed, consigned and delivered as indicated above which carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in all or any said property, that every service to be performed hereunder shall be subject to the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/23/2022
 Per: Luis Castro Date: 2/23/22

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations, also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Belinda Spivey Date: 4/4/20

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT # 91075-28

TO _____ FROM _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOINTBRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 019791 05a
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Cop Bull</i>	Date: <i>4-4-22</i>

79500 G
31080 T
48420 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 11060301

WEIGHED BY _____

DRIVER

Cody Smith

CO-DRIVER



WASTE MANAGEMENT

 OWN TRANSPORTATION - LAKE CHARLES
 7170 JOHN BRANNON RD.
 SULPHUR, LA 70683
 (000) 338-2188

CWM

TRANSPORTER

258243

SERVICE ORDER

PROFILE NUMBER	START TRIP LOCATION Sulphur, LA	DATE	4-4	TIME	
	END TRIP LOCATION Sulphur, LA	DATE	4-4	TIME	
DISPATCHED BY Barry	TRUCK # 153504	TRAILER #		TYPE	Rail
ORDER CALLED IN BY	ROLL OFF INSTRUCTIONS (✓)				
INSTRUCTIONS pick up at rail empty bring it back	WAIT TO LOAD	FEEL ONLY	SWAP	TURN	PILE ONLY
				✓	
CONTACT	CODES:				
PHONE	1. DEPART FACILITY 2. ARRIVE JOB SITE 3. LEAVE JOB SITE 4. ARRIVED TO 5. DEPART JOB 6. ARRIVED FACILITY 7. BREAKDOWN START 8. BREAKDOWN END 9. OTHER (EXPLAIN)				
LOAD SCHEDULED DATE	DATE	TIME AM/PM	CODE	EXPLANATION	
	4-4	6:20	1	CWM	
		7:10	2	rail	
		7:27	3	rail	
		8:20	4	TSP	
		10:00	5	TSP	
				rail	
SHIPPER NAME Philadelphia Energy					
ADDRESS					
CITY / STATE					
PO #					
HAZARD CLASS	UN/NA #				
PROPER SHIPPING NAME					
CONTAINER TYPE	CONTAINER NUMBER	SIZE	DEMURRAGE EXPLANATIONS:		
CONTAINER DROPPED AT JOB SITE					
CONTAINER PICKED UP AT JOB SITE	rail	?			
LINER DELIVERED: Y N	EQUIPMENT WASHOUT: Y N				
BOX CONDITION: GOOD POOR	EQM				
REMARKS:	Box # 5363				
RECEIVER NAME: Cwm	SHIPPER SIGNATURE: X Carlos Rojas				
ADDRESS	SHIPPER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTURE TIME				
CITY/STATE: Sulphur, LA	MANIFEST #: 91075-2B				
S.R. # 61386	TIME SLOT	DOLLY DOWN EQUIPMENT / BOX #			
TRUCK #	DATE	DOLLY DOWN LOCATION			
RECEIVER'S SIGNATURE: P S	RECEIVER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTURE TIME				

155488
 Bill of Lading (Page 1 of 2)

UN175-OK

766193

DOCUMENT# 91075-20

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 170 JOHN BRANNON ROAD
FPA ID: 1A0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2168

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 049701 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

WRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Tank (1361)

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	COM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. 0. III (BENZENE) PROFILE: 909843LA	CM	24.30	T
		CONTAINER# EPIU225137 RAIL CAR# EPHX91075			
		ERG# 171 H030		NR	

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, packaged and classified as indicated above which said carrier (the word carrier being understood through this contract to mean any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If this route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 7/23/2022 Per: *Luis Castro* Date: 8/23/2022

Mark with "X" or "03" if appropriate to designate Hazardous Materials Substances as defined by the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201 (a)(1) (i) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per: *Belinda Spicer* Date: *4/11/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91075-2C

TO: ... FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70865
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNRAVE
EPA ID: PAD 049791 068
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LAD00014/2/2 (800) 336 2169
Acknowledgement of Receipt	
Per: <i>W. K. Paul</i>	Date: <i>4-1-22</i>

DRIVER Vernon Paul
 CO-DRIVER _____



WASTE MANAGEMENT
 WASTE MANAGEMENT - LAKE CHARLES
 170 JOHN BRANNON RD
 SULPHUR LA 70663
 (800) 336-2109

CWM F
TRANSPORTER
 255054

SERVICE ORDER

PROFILE NUMBER <u>9698432A</u>		START TRIP LOCATION <u>Sulphur LA</u>	DATE <u>4-1-22</u> TIME
DISPATCHED BY _____		TRUCK # <u>653482</u>	TRAILER # <u>707789</u> TYPE <u>CT</u>
ORDER CALLED IN BY _____		ROLL OFF INSTRUCTIONS (V)	
INSTRUCTIONS <u>E/R</u>		WAIT TO LOAD	DEL ONLY
CONTACT _____		SWAP	TURN
PHONE _____		CODES:	1. BRE/MOON/STARE
LOAD SCHEDULED DATE _____		2. BRE/MOON/STARE	3. BRE/MOON/STARE
LOAD SCHEDULED TIME _____		3. LEFT JOB SITE	4. BRE/MOON/STARE
SHIPPER NAME <u>Philadelphia Energy</u>		4. ARRIVE TRC	5. BRE/MOON/STARE
ADDRESS _____		5. DEPART TRC	6. ARRIVED FACILITY
CITY/STATE <u>LACASSINE</u>		6. ARRIVED FACILITY	7. BRE/MOON/STARE
PO # _____		7. BRE/MOON/STARE	8. BRE/MOON/STARE
HAZARD CLASS _____ UN/NA # _____		8. BRE/MOON/STARE	9. OTHER (FKM AND)
PROFER SHIPPING NAME _____		DATE	TIME AM/PM
CONTAINER DROPPED AT JOB SITE		CODES	EXPLANATION
CONTAINER PICKED UP AT JOB SITE		<u>4-1-22</u>	<u>0745</u> <u>2</u> <u>Philadelphia</u>
LINER DELIVERED: Y N			<u>0820</u> <u>3</u> <u>Philadelphia</u>
EQUIPMENT WASI-CAT Y N			<u>0900</u> <u>4</u> <u>CWM</u>
BOX CONDITION: GOOD FNR POOR			<u>1030</u>
REMARKS: <u>EPFX-20-5137</u>		DEMURRAGE EXPLANATIONS:	
RECEIVER NAME: <u>CWM</u>		SHIPPER SIGNATURE: <u>[Signature]</u>	
ADDRESS _____		SHIPPER SIGNATURE (IF NOT APPROVED AND DEPARTURE TIME)	
CITY/STATE <u>Sulphur LA</u>		MANIFEST #: <u>EPFX 91075</u>	
SR # <u>65387</u>	TIME SLOT	DOLLY DOWN EQUIPMENT / BOX #	
RVN #	DATE <u>4-1-22</u>	DOLLY DOWN LOCATION	
RECEIVER'S SIGNATURE: <u>[Signature]</u>		RECEIVER'S SIGNATURE (IF NOT APPROVED AND DEPARTURE TIME)	

053504 UNITS ON 7/6/191

Bill of Lading (Page 1 of 2)

DOCUMENT # 91075-2D

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC *Inc*
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA000017201
 City/State/Zip: GULFPORT LA 70665
 Phone: (337) 503-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVL
 EPA ID: PAD 049781 080
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (484) 228-1624

ADDITIONAL INFORMATION

VIRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.116 1241

Telad 6/3/22

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	HOW
X	1	RD UN3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 089843LA	CM	24.33	T
		IM CONTAINER# EPIU225237			
		RAIL CAR# EPIX91076			
		ERG# 171 H030		NH	

RECEIVED subject to the conditions and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and number of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If by its route, otherwise to deliver to another carrier on the route to said destination it is mutually agreed as to each article of and/or any of said property, over all or any portion of said route to destination and as to each party of any firm interested in all or any said property, that every service to be performed hereunder shall be subject to the Bill of Lading terms and conditions & the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 2/23/2022
 Per: *Luis Castro* Date: *2/23/22*

Mark with "X" or "RD" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (j) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials
 Per: *Belinda Spicer* Date: *4/1/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81075-2D

TO: *PHILADELPHIA* FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SUITPHUR LA 70665
Phone: (504) 683-2109

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049/01 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LAD000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Joseph Corbell</i>	Date: <i>9/1/2022</i>

7/16/91
10:41
1000
1000
1000
1000

Weight	81020 G
Net Weight	32160 T
Net Weight	48860 N

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7166191

WEIGHED BY _____

DRIVER Joseph Courville
 CO-DRIVER _____



WASTE MANAGEMENT

GWM TRANSPORTATION - LAKE CHARLES
 7170 JOHN BRANNON RD.
 SULPHUR, LA 70663
 (800) 338 2189

CWM

TRANSPORTER

251399

SERVICE ORDER

PROFILE NUMBER <u>969843LA</u>	START TRIP LOCATION <u>Sulphur LA</u>	DATE <u>4/11/2022</u>	TIME _____
END TRIP LOCATION <u>Sulphur LA</u>	DATE <u>4/11/2022</u>	TIME _____	
DISPATCHED BY <u>Ricky</u>	TRUCK # <u>657507</u>	TRAILER # <u>200889</u>	TYPE <u>Re. 1</u>
ORDER CALLED IN BY _____	ROLL OFF INSTRUCTIONS (✓)		
INSTRUCTIONS _____	WAIT TO LOAD	DEL. ONLY	SWAP ✓
			ILHN
			PAJ ONLY
			INTER-PLAT
CONTACT _____	CODES:		
PHONE _____	1. DEPART FACILITY	4. ARRIVE TSD	7. UNLOAD/DOWN START
LOAD SCHEDULED DATE _____	2. APPROV. JOB SITE	5. DEPART TSD	8. BREAKDOWN END
LOAD SCHEDULED TIME _____	3. LEFT JOB SITE	6. ARRIVE FACILITY	9. OTHER (EXPLAIN)
SHIPPER NAME <u>PLT Energy</u>	DATE	TIME AM/PM	CODE
ADDRESS _____			EXPLANATION
CITY / STATE <u>Lacrosse LA</u>			
PO # _____			
HAZARD CLASS _____			
UN/NAE _____			
PROPER SHIPPING NAME _____			
CONTAINER TYPE	CONTAINER NUMBER	SIZE	DEMURRAGE EXPLANATIONS:
CONTAINER DROPPED AT JOB SITE	<u>01T 5293</u>	<u>70yd</u>	
CONTAINER PICKED UP AT JOB SITE	<u>01T 5297</u>	<u>70yd</u>	
INFRASTRUCTURE: Y N	EQUIPMENT WASHOUT: Y N		
BOX CONDITION	GLD	FAP	POD
REMARKS:	<u>return 1614-22-5293</u>		
	<u>pls 1614-22-5297</u>		
RECEIVER NAME: <u>CWM</u>	SHIPPER SIGNATURE: <u>[Signature]</u>		
ADDRESS <u>7170 John Brannon Rd</u>	SHIPPER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTURE TIME		
CITY / STATE <u>Sulphur LA</u>	MANIFEST #: <u>91075-20</u>		
SH. # <u>61988</u>	TIME SLOT	DAILY DOWN EQUIPMENT / BOX #	
FLIN #	DATE <u>4/11/2022</u>	DAILY DOWN LOCATION	
RECEIVER'S SIGNATURE: <u>[Signature]</u>	RECEIVER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTURE TIME		

Bill of Lading (Page 1 of 2)

WELBY *0041075-2E* *MLO6220*

DOCUMENT # 91075-2E

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC. *JRK*

Street: 7170 JOHN BRANNON ROAD

EPA ID: LA0000777201

City/State/Zip: SULPHUR LA 70665

Phone: (337) 503-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3144 PASSYUNICAVE

EPA ID: PAD 049791 098

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Tickets 61389

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	HOW
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID N.D.S. 9.11 (BENZENE) PROFILE 9698431 A	CM	24.30	T
		IM CONTAINER# EPIU225130			
		RAIL CAR# EPIX1075			
		FRG# 171 H039		<i>ASH</i>	

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. It will its route otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each owner of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/23/2022

Per: *Luis Castro* Date: *2/23/22*

Mark with "X" or "RD" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 115.201(b)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Belinda Spicer Date: *4/1/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01075-215

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC <i>Inc</i>
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SHREVEPORT LA 70565
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3141 PASSYUNK AVE
EPA ID: PA0000791095
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 283-1521

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgement of Receipt	
Per: <i>Joseph Conville</i>	Date: <i>4/1/2022</i>

Handwritten signature

2004 06 01
2100 000 000 000 000
0 000 000 000 000

000000 0000 0000

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0000	0000 0000		31840 T
0000	0000 0000		40280 N

0000 0000 0000

0000 0000 0000

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 11012200

WEIGHED BY _____

DRIVER Joseph Cowan, III
 CO-DRIVER _____



WASTE MANAGEMENT

CWM TRANSPORTATION - LAKE CHARLES
 7170 JOHN BRANNAN RD
 BAY LAUREL, LA 70023
 (800) 332-2111

Cwm

TRANSPORTER

251400

SERVICE ORDER

PROFILE NUMBER	<u>969893LA</u>	START TRIP LOCATION	<u>Sulphur LA</u>	DATE	<u>9/11/2022</u>	TIME	
		END TRIP LOCATION	<u>Sulphur LA</u>	DATE	<u>9/11/2022</u>	TIME	
DISPATCHED BY	<u>Barry</u>	TRUCK #	<u>653504</u>	TRAILER #	<u>200889</u>	TYPE	<u>Rail</u>
ORDER CALLED IN BY		ROLL OFF INSTRUCTIONS (✓)					
INSTRUCTIONS		WAIT TO LOAD	DEL. ONLY	SWAP	TURN	PICK UP	INTER-PLANT
				<input checked="" type="checkbox"/>			
CONTACT		CODES:					
PHONE		1. DEPART FACILITY	2. ARRIVE TSU	3. DEPART TSU	4. ARRIVE FACILITY	7. BULK/DUMPER START	8. BULK/DUMPER END
		3. DEPART TSU	4. ARRIVE FACILITY	7. BULK/DUMPER START	8. BULK/DUMPER END	9. OTHER EXPLAIN	
LOAD SCHEDULED DATE		DATE	TIME	CODE	EXPLANATION		
LOAD SCHEDULED TIME			<u>9:55</u>	<u>1</u>	<u>CWM</u>		
SHIPPER NAME	<u>phil energy</u>		<u>10:40</u>	<u>2</u>	<u>phil energy</u>		
ADDRESS			<u>11:50</u>	<u>3</u>	<u>phil energy</u>		
CITY / STATE	<u>Lacrosse LA</u>		<u>13:20</u>	<u>4</u>	<u>CWM TSD</u>		
P.O. #			<u>14:45</u>	<u>5</u>	<u>CWM TSD</u>		
HAZARD CLASS		UN / NA #					
PROPER SHIPPING NAME							
		CONTAINER TYPE	CONTAINER NUMBER	SIZE	DEMURRAGE EXPLANATIONS:		
CONTAINER DROPPED AT JOB SITE		<u>OT</u>	<u>5237</u>	<u>30yd</u>			
CONTAINER PICKED UP AT JOB SITE		<u>OT</u>	<u>5130</u>	<u>30yd</u>			
LINER DELIVERED	<input checked="" type="checkbox"/>	EQUIPMENT WASHED	<input checked="" type="checkbox"/>				
BOX CONDITION	<u>GOOD</u>	<u>TOP</u>	<u>PUSH</u>				
REMARKS:	<u>return LG 26-22-5237</u>						
	<u>phi / LG 26-22-5130</u>						
RECEIVER NAME:	<u>CWM</u>	SHIPPER SIGNATURE:		<u>[Signature]</u>			
ADDRESS	<u>7170 John Brannan Rd</u>	SHIPPER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTURE TIME					
CITY / STATE	<u>Sulphur LA</u>	MANIFEST #:		<u>91075-22</u>			
BOX #	<u>61384</u>	TIME SLOT	DOLLY DOWN EQUIPMENT / BOX #				
HUN #		DATE	DOLLY DOWN LOCATION				
		<u>9/11/2022</u>					
RECEIVER'S SIGNATURE:	<u>[Signature]</u>						
	RECEIVER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTURE TIME						

W3815

0091045-2F

Bill of Lading (Page 1 of 2)

Xcel 2/14

DOCUMENT # 91075-2F

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LAD000777201	
City/State/Zip: SULPHUR LA 70885	
Phone: (337) 583-2189	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 049791 098	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 228-1524	

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(b) 1241

Ticket 61340

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIALS	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WGM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. & LI (BENZENE)	CM	24.35	T
		PROFILE: 000843LA			
		IM CONTAINER# EIMU225148			
		RAIL CAR# EPIX91075			
		ERG# 171		HQ30	

RECEIVED subject to the classifications and limits in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier, on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interpreted in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: 2/23/2022
Per: <i>Luis Castro</i>	Date: 2-23-22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201 (a)(3) 001 of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Carrie Embodaux</i>	Date: <i>2-23-22</i> <i>H/1/22</i>


Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91075-2F

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JGHM BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 0497B1 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LAD000147272 (800) 336-2169	
Acknowledgment of Receipt	
Per: 	Date: 4.1-22

DRIVER Derrick Gray
 CO-DRIVER Dante Tanner



WASTE MANAGEMENT
 CWM TRANSPORTATION - LANE DIVISION
 7170 JOHN BRANNON RD.
 SUITE 100, LA 70653
 (800) 306-2469

CWM
 TRANSPORTER
 250063

SERVICE ORDER

PROFILE NUMBER <u>969843LA</u>		START TRIP LOCATION <u>Sulphur, LA</u>	DATE <u>4-1-22</u>	TIME
DISPATCHED BY <u>Barry</u>		TRUCK # <u>653375</u>	TRAILER #	TYPE <u>Rail</u>
ORDER CALLED IN BY		ROLL OFF INSTRUCTIONS (1)		
INSTRUCTIONS <u>S/O</u>		WAIT TO LOAD	DEL ONLY	SWAP <input checked="" type="checkbox"/>
CONTACT		4 ARRIVE TO D 5 DEPART TO D 6 ARRIVE FACILITY 7 BREAKDOWN STAIN 8 BREAKDOWN END 9 OTHER EXPLAIN		
PHONE		1 DEPART FACILITY 2 ARRIVE JOB SITE 3 DEPT JOB SITE		
LOAD SCHEDULED DATE		DATE	TIME AM/PM	CODE
LOAD SCHEDULED TIME				EXPLANATION
SHIPPER NAME <u>Phil Energy</u>			<u>8:41</u>	<u>1</u> <u>Cwm</u>
ADDRESS			<u>9:32</u>	<u>2</u> <u>Rail</u>
CITY/STATE <u>Iowa, LA</u>			<u>10:10</u>	<u>3</u> <u>Rail</u>
P.O. #			<u>11:18</u>	<u>4</u> <u>Cwm</u>
HAZARD CLASS			<u>1:30</u>	<u>5</u> <u>Cwm</u>
UN/NAE				
PROPER SHIPPING NAME				
CONTAINER TYPE	CONTAINER NUMBER	SIZE	DEMURRAGE EXPLANATIONS:	
<u>Rail</u>	<u>5346</u>	<u>30</u>		
CONTAINER DROPPED AT JOB SITE	<u>5148</u>			
CONTAINER PICKED UP AT JOB SITE				
UNL/DLIVERED	Y	N	EQUIPMENT WASH/DN	Y
BOX CONDITION	GOOD	FNR	MOOR	
REMARKS:				
RECEIVER NAME <u>Cwm</u>		SHIPPER SIGNATURE: <u>Dante Tanner</u>		
ADDRESS <u>7170 JBR</u>		SHIPPER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTURE TIME		
CITY/STATE <u>Sulphur, LA</u>		MANIFEST #:		
SR # <u>61390</u>	TIME SLOT	DELIVERY EQUIPMENT / UNIT #		
REL #	DATE	DELIVERY DOWN LOCATION		
RECEIVER'S SIGNATURE:		RECEIVER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTURE TIME		

0523488

0091014-3H 766155

Bill of Lading (Page 1 of 2)

DOCUMENT # 81074-3A

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LAD000777201	
City/State/Zip: SULPHUR LA 70685	
Phone: (337) 583-2169	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 2144 PASSYUNK AVE	
EPA ID: PA0 049791 C98	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (484) 220 4524	

ADDITIONAL INFORMATION	
VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241	
TJ Dick 6/16/22	

SHIPPER'S INSTRUCTIONS	

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RC, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE SOLID, N.O.S. 9. III (BENZENE) PROFILE: R69843LA	CM	19.88	T
		IM CONTAINER# EPIU225273			
		RAIL CAR# EPIX91074			
		ERG# 171 H038		NH	

RECEIVED subject to the classifications and limits in effect on the date of the issue of this Bill of Lading, the property described above is accepted in good order, except as noted (contents and condition of packages unknown), marked, conditioned and declined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route in destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification of the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC		Carrier: CSX Railroad Corp	
Person: <i>[Signature]</i>	Date: 2/28/2022	Person: Luis Castro	Date: 3/1/22

Mark with "X" or "RC" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 312 20140(1) (D) of Title 49, Code of Federal Regulations, over when shipping hazardous materials. The shipper's certification statement prescribed in section 172.904(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignor: Chemical Waste Management, Inc	Certification of receipt of materials
Person: <i>Patricia Spicer</i>	Date: 3/30/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91074-3A

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC.
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70965
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3141 PASSYUNKAVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19149
Phone: (480) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 338-2169
Acknowledgement of Receipt	
Per: <i>Frank Paul</i>	Date: <i>3-30-22</i>

U53504

0091014-38

766157

Bill of Lading (Page 1 of 2)

DOCUMENT# 91074-3B

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD009077201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 683-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 04979 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

ADDITIONAL INFORMATION

VRF TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 49CFR 201.41(a) 1241

Ticks taken

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S 9 III (BENZENE) PROFILE: 56BB43LA	CM	22.10	T
		IM CONTAINER# EPIU225150			
		RAIL CAR# EPIX91074			
		ERG# 171 H030		NA	

RECEIVED subject to the classifications and limits in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (contents and condition of packages unknown), received consigned and destined as indicated above which as a carrier (the word carrier being understood through this contract as meaning any vessel or conveyance in possession of the property under the contract) agrees to carry for its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier or to a destination it is mutually agreed as to such carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all of any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: <i>[Signature]</i>	Date: 2/28/2022
Per: <i>Luis Castro</i>	Date: 3/1/22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(d)(4) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>Belinda Spicer</i>	Date: 3/30/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91074-3B

To: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 0497B1 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1521

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Joseph Cotroneo</i>	Date: <i>7/13/12/02</i>

75000 G
31220 T
43780 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 764152
WEIGHED BY _____

0033115 0041014-3C
760135

Bill of Lading (Page 1 of 2)

DOCUMENT #

91074-3C

TO
 Consigned: CHEMICAL WASTE MANAGEMENT *Inc*
 INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70885
 Phone: (337) 563-2189

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAJ 049791 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 49CFR
 261.4(a)1241
Tanks 61695

SUPPLIER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	FROM
X	t	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. 9. III (BENZENE) PROFILE: 969843LA	CM	24.20	T
		IN CONTAINER# EPIU226155			
		RAIL CAR# CPIX91074			
		ERG# 171 H03B			

RECEIVED subject to the declarations and terms to effect on the date of the issue of this Bill of Lading, the property described above is accepted good order except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. It on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any firm interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 2/28/2022
 Per: *Luis Castro* Date: 3/1/22

Mark with "X" or "NO" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of Hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(3) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirements provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Beunda Spicer* Date: *3/30/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91074-30

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7176 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SUITPHUR LA 70605
Phone: (337) 683-2180

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049791 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>D. J. [Signature]</i>	Date: <i>3-29-27</i>

1760135

TICKET #

ID 653375

GROSS 83620 lb (37480 kg)

DATE 03/30/2022

NET 34720 lb (15760 kg)

GROSS	83620 lb	RECORDED	83620 G
NET	34720 lb		34720 T
TOTAL	118340 lb		48900 N

DATE 03/30/2022

DATE 03/30/2022

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 1760135

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

[Handwritten signature]

0011074-30

7/6/26

DOCUMENT# 91074-3D

TO
 Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: TAD000777261
 City/State/Zip: SULPHUR LA 70685
 Phone: (337) 563-2189

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYLUNKAVE
 EPA ID: PAD 046791 098
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (480) 220-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
Tank 101/16

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 6.11 (BENZENE) PROFILE: 988843LA	CM	24.03	T
		IM CONTAINER# EPI1226342			
		RAIL CAR# EPIX91024			
		ERG# 171 H038 <i>AH</i>			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (contents and condition of packages unknown), marked consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interposed in or on any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 2/28/2022
 Per: *Luis Castro* Date: 3/1/22

Mark with "X" or "RC" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bill of Lading 49 CFR 172.201 (a)(3) (ii) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Polinda Spicer* Date: *3/30/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# B1074-3D

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN DRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 096
City/State/Zip: PHILADELPHIA, PA 19148
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 338-2169	
Acknowledgement of Receipt	
Per: <i>Joseph Smith</i>	Date: <i>3/30/2022</i>

011111

77100 G
31380 T
45720 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 71611111
WEIGHED BY _____

053315

0041074-3C

7106149

Bill of Lading (Page 1 of 2)

DOCUMENT # 91074-3C

TO

Consignee: CHEMICAL WASTE MANAGEMENT
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD00077201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2469

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049781 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
DEFINITION OF SOLID WASTE UNDER 40CFR
201.4(a) 1241

Tank 6/16/97

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9. III (BENZENE) PROFILE: 989843LA	CM	23.70	T
		IM CONTAINER# EPIU226191			
		RAIL CAR# EPIX91074			
		ERG# 171 HOSP	NH		

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, counted and sealed as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/28/2022
Per: *Lucia Castro* Date: 3/1/22

Mark with "X" or "HQ" if appropriate to designate Hazardous Waste's Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations, also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(e) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirements is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
Certification of receipt of materials

Per: *Belinda Spicer* Date: *3/30/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91074-3E

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049781 080
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2159	
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: 3-30-22

110000000000

82200 G
34760 T
47500 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 1010 1100
WEIGHED BY _____

Bill of Lading (Page 1 of 2)

10/3/88 *COMM-F* *Rad/38*

DOCUMENT # 91074-3F

TO

Consignee: CHEMICAL WASTE MANAGEMENT *Inc*
 INC.
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD00D777201
 City/State/Zip: SULPHUR LA 70685
 Phone: (504) 503-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 040/91 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 220 1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.4(a) 1241

Tubert 6/1/99

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RG, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.III (BENZENC) PROFILE: 960843LA	GM	21.68	T
		IM CONTAINER# EPIU225082			
		RAIL CAR# EPIX91074			
		ERG# 171 H039 <i>NH</i>			

RECEIVED subject to the classification and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is accepted, good order, except as noted (contents not) condition of packages unknown, marked consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. It on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/28/2022
 Per: *Luis Castro* Date: 3/1/22

Mark with "X" or "RG" if appropriate to designate the various Hazardous Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on bills of Lading 172.204(a)(1) (ii) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper certifies an attachment prescribed in 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirements is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc. Certification of receipt of materials

Per: *Jared Dean* Date: *[Signature]* 3/30/22

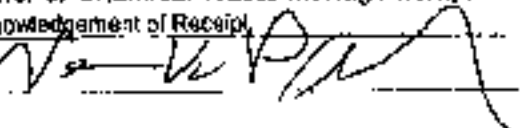
Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91074-3F

TO: _____ FROM: _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0048791098
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (484) 228-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 338-2168	
Acknowledgement of Receipt	
Per: 	Date: 3-30-22

11 11 11 11 11 11
11 11 11 11 11 11
11 11 11 11 11 11

73560 G
30460 B
43100 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 1100128
WEIGHED BY _____

053010

0011434-4A

766110

Bill of Lading (Page 1 of 2)

DOCUMENT # 91434-4A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC *INC*
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA000077291
 City/State/Zip: SULPHUR LA 70306
 Phone: (337) 503-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASEYUNIKWVF
 EPA ID: PAD 049791 D90
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (440) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 61703

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	LCM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B.I.F. (BENZENE) PROFILE: 959843LA	CM	19.06	T
		IM CONTAINER# EPIU25292			
		RAIL CAR# EPIX91434			
		ERG# 171 14039 <i>A14</i>			

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract) as receiving any person or corporation in possession of the property under the contract, agrees in conformity with its usual place of delivery or said destination. It on its part, otherwise to deliver in another carrier or the route to said destination it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any firm interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/28/2022 Per: *Luis Castro* Date: 3/1/22

Mark with "X" or "RQ" as appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(g)(1) of the Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as included on the Bill of Lading does apply. Unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per: *Blinda Spicer* Date: *3/29/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91434-4A

TO _____ FROM _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SUITPHUR LA 70605
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAID 049791 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Derrick Gray</i>	Date: <i>3-29-22</i>

72120 G
34040 T
38080 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOI IN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 112416

WEIGHED BY _____

10/28/22
 Bill of Lading (Page 1 of 2)

W011434-3B-7666125

DOCUMENT # 91434-4B

TO
 Consignee: CHEMICAL WASTE MANAGEMENT
 INC
 Street: 7170 JOHN BRAMMON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 503-2189

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 096
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (480) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.1161 1241
 Trade Terms

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. S.I.P. (BENZENE) PROFILE 6698451A	CM	19.50	T
		1M CONTAINERS EPIU225299			
		RAIL CAR# EPIX91434			
		ERG# 171 H039	NH		

RECEIVED subject to the classifications and units in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery or said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every contract to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CBX Railroad Corp
 Per: [Signature] Date: 2/28/2022
 Per: Lisa Coats Date: 3/1/22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Delenda Spicer Date: 3/29/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91434-4B

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc	
I AD000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>V. K. Par</i>	Date: <i>3-29-22</i>

69380 G
30620 T
38760 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SUITE 100, LA 70665

RECEIVING TICKET #

11/11/08

WEIGHED BY _____

162504

009131-112-106104

Bill of Lading (Page 1 of 2)

DOCUMENT #

91434-4C

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 503-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Tanks 67106

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) PROFILE: 969843LA	CM	21.18	T
		IM CONTAINER# EPIU225088			
		RAIL CAR# EPTX61434			
		ERG# 171 H039	NH		

RECEIVED subject to the classification and ratings in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which each carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as so designated. It shall route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any item interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 2/28/2022 Per: *Lucas Castro* Date: 3/1/22

Mark with "X" or "RD" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulation governing the transportation of hazardous materials. The use of the column is an optional method for identifying hazardous materials on Bills of Lading. 172.201(a)(1) (B) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials

Per: *Belinda Spicer* Date: *3/28/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91434-4C

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70666
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
FPA ID: FAD 049781 083
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 338-2169
Acknowledgement of Receipt	
Per: <i>Joseph Coyle</i>	Date: <i>7/28/2022</i>

73660 G
31740 T
41920 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 100000
WEIGHED BY _____

053488 0041151-40 7600107

Bill of Lading (Page 1 of 2)

DOCUMENT# 91434-4D

TO
 Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD00077207
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2168

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PA0 048781 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.6(a) 1241
 Ticks (1/10)

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RG UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B. IN (BENZENE) PROFILE: 96884SLA IM CONTAINER# EPIU225235 RAIL CAR# EPIX91434 ERG# 171 H039	CM	21.35	T

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time (insofar as all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/28/2022
 Per: Luis Castro Date: 3/1/22

Mark with "X" or "RG" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1)(ii) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper certifies that the information prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Belinda Spicer Date: 3/29/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91434-4D

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 483-2168

Shipper: PHILADELPHIA ENERGY SOLUTIONS RSM LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 048791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (40) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2168	
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: <i>3-28-22</i>

72960 G
30760 T
42210 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SUITE PHUR, LA 70665

RECEIVING TICKET # 104107

WEIGHED BY _____

153001 001434-4E 7/29/22

Bill of Lading (Page 1 of 2)

DOCUMENT # 91434-4E

TO
 Consignee: CHEMICAL WASTE MANAGEMENT INC.
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70865
 Phone: (337) 683-2109

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (484) 226-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
 Ticks 6/108

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	COM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 8 III (BENZENE) PROFILE: 989643LA IM CONTAINER# EPYU225079 RAIL CARN# EPIX91434 ERG# 171 H039 NH	GM	18.20	T

RECEIVED subject to the classifications and limits in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If or its route, otherwise to deliver in another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time hereafter in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 7/28/2022
 Per: *Luis Castro* Date: 3/1/22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.204(a)(1) (b) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Belinda Spicer* Date: 3/29/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91434-4E

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70865
Phone: (337) 503-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 040791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 338-2169	
Acknowledgement of Receipt	
Per: <i>Joseph</i>	Date: <i>3/29/2022</i>

70860 G
31520 T
39340 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 1100108

WEIGHED BY _____

0091434-4F 766108

Bill of Lading (Page 1 of 2)

DOCUMENT # 91434-4F

TO
 Consignor: CHEMICAL WASTE MANAGEMENT Inc
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD00077201
 City/State/Zip: SULPHUR LA 70685
 Phone: (337) 603 2169

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: FAD 049701 008
 City/State/Zip: PHILADELPHIA, PA 19116
 Phone: (410) 226-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(b) 1241
 TRUCK 6/1/09

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B.IV (BENZENE) PROFILE: 069043LA	DM	13.85	T
		IM CONTAINER# EPIU226301			
		RAIL CAR# EPIX91434			
		ERG# 171 1000			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the place of delivery or said destination. It shall remain, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Port: *[Signature]* Date: 2/28/2022
 Per: Luis Castro Date: 3/1/22

Mark with "X" or "RQ" if appropriate to designate Hazardous Material Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (B) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Date: 3/29/22
 By: *Beunda Spicer*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91434-4F

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SUITLAND LA 70665
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS TRSM LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA00049791098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2189
Acknowledgement of Receipt	
Per: <i>Joseph Comulle</i>	Date: <i>3/29/2022</i>

70560 G
31160 T
39400 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 116218 _____

WEIGHED BY _____

152315 ORIGINAL #44 766170

Bill of Lading (Page 1 of 2)

DOCUMENT # 91080-4A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SULPHUR LA 70885
 Phone: (337) 583-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 226-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.1(a) 1241

Ticket 46172

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD, UN3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9 III (BENZENE) PROFILE: 969843LA	CM	19.93	T
		IM CONTAINER# EPIU225369			
		RAIL CAR# EPIX01083			
		ERG# 171 H030 NH			

RECEIVED subject to the details and terms in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (nature and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as per destination. If on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any line interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 2/28/2022
 Per: Luis Castro Date: 3/1/22

Mark with "X" or "RC" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 472.201(a)(1) (2) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials
 Per: *Belinda Spencer* Date: 3/3/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91D60-4A

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 593-2165

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	IA0000147272 (800) 336-2168
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: 3-31-22

11/11/01

7440 G
5880 J
39560 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 111111

WEIGHED BY _____

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91060-4B

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT *Dnc*
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70666
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

Carrier 2: BNSF Railway Company
Acknowledgement of Receipt:
Per: _____ Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169
Acknowledgement of Receipt:
Per: *Joseph Courullo* Date: *4/17/2020*

72220 G
31320 T
40900 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 20071010

WEIGHED BY _____

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91060-4C

TO.....FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC. <i>Inc.</i>
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 049731 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LAD000147272 (800) 338-2168	
Acknowledgement of Receipt	
Per: <i>Joseph Colvard Jr.</i>	Date: <i>9/11/2002</i>

158188

001100-118

7661168

Bill of Lading (Page 1 of 2)

DOCUMENT # 81000-4D

TO

Consignee: CHEMICAL WASTE MANAGEMENT *Inc*
 INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 583-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.4(a) 1241

Ticket 6/115

SHIPPER'S RESTRICTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	COM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., B.M (BENZENE) PROFILE: 909843LA	CM	20.60	T
		IM CONTAINER# EPIU225350 RAIL CAR# EPIX01060			
		ERG# 171 H030	<i>NA</i>		

RECEIVED subject to the descriptions and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (quantity and condition of packages unknown), marked consigned and delivered as indicated above which said carrier, the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract, agrees to carry to its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 2/28/2022
 Per: *Luis Castro* Date: 3/1/22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substance as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1), (8) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(e) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc. Certification of receipt of materials
 Date: *3/31/22*
Blenda Spicer

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91060-40

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077207
City/State/Zip: SULPHUR LA 70565
Phone: (337) 683-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3111 PASSYUNK AVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Vern K Paul</i>	Date: <i>3-31-20</i>

114

7126041
30540 T
40920 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 114

WEIGHED BY _____

152215 UNK-47160189

Bill of Lading (Page 1 of 2)

DOCUMENT# 91000-4E

TO
 Consignee: CHEMICAL WASTE MANAGEMENT Inc
 INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0600777201
 City/State/Zip: SULPHUR LA 70885
 Phone: (337) 583-2169

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNIKAVE
 EPA ID: PAD 049791 096
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
 Tickets 2/11/22

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UDM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9. III (BENZENE) PROFILE: 959843 LA IM CONTAINER# EPIU225346 RAIL CAR# FPIX91080	CM	20.30	T
		ERG# 171 H039 NH			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, crated and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the best place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier at all or any of said property, over all or any portion of said route or destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: [Signature] Date: 2/28/2022
 Per: Luis Castro Date: 3/1/22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations, 49 CFR, when shipping hazardous materials. The shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on this Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Belinda Spence Date: 4/1/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# B1080-4E

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT
INC
Street: 2170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SULPHUR LA 70865
Phone: (337) 683-2169

Inc

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAU 048781 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (440) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LAD000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Daniel King</i>	Date: <i>5-31-22</i>

75320 G
34340 T
40980 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #

10001

WEIGHED BY _____

10/3/88

DOMILYON-HF

7/6/88

Bill of Lading (Page 1 of 2)

DOCUMENT # 01060-4F

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC

Street: 7170 JOHN BRANNON ROAD

EPA ID: LAD000777201

City/State/Zip: SULPHUR LA 70685

Phone: (337) 583-2169

JAC

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3144 PASSYUNK AVE

EPA ID: PAD 049791 080

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (480) 220-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.11(a) 1241

T. J. [Signature]

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RO, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROF II E: 969843LA	CM	19.00	T
		IM CONTAINER# FPIU225037			
		RAIL CARN# FPIX91060			
		ERG# 171 H039			

NH

RECEIVED subject to the classifications and tanks in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. On its route, although to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as in said party at any time requested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

For: [Signature]

Date: 2/28/2022

For: Luis Castro

Date: 3/1/22

Mark with "X" or "NO" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(3) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials the shipper's certification statement prescribed in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

By: Belinda Spicer

Date: 3/31/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01060-1F

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC <i>inc</i>
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0006777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 049791 080
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Yr - K. Pay</i>	Date: <i>3-31-22</i>

69760 G
30760 J
39000 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 742185

WEIGHED BY. _____

Patrick Dauria

From: Doan, Janet <JDoan@wm.com>
Sent: Tuesday, April 26, 2022 5:06 PM
To: Patrick Dauria
Cc: Rhyne, John
Subject: EPIX 91447-3
Attachments: 91447-3.pdf

Good afternoon Patrick,
BOLs and weight tickets attached for 91447-3.

Loads listed below were solidified

91447-3A
91447-3B
91447-3E
91447-3F

Thanks,

JANET DOAN

Scheduling Coordinator

Gulf Coast Area

GulfCoastScheduling@wm.com

jdoan@wm.com

Main: 337.583.3700

Direct: 337.583.3745

7170 John Brannon Road

Sulphur, LA 70665



0582004 0011447-3A 766563

Bill of Lading (Page 1 of 2)

DOCUMENT # 91447-3A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 717D JOHN BRANNON ROAD
 EPA ID: LA1006077201
 City/State/Zip: SUITLAND LA 70060
 Phone: (337) 983-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3141 PASSBYUNKAVE
 EPA ID: PAD 049701 09R
 City/State/Zip: PHILADELPHIA, PA 19116
 Phone: (484) 228 1624

ADDITIONAL INFORMATION

VNF TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(g) 1241

Ticket 62014

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9.II (BENZENE) PROFILE: 05BR43LA IRI CONTAINER# EPIU228343 RAIL CAR# EPK8144M ERG# 171 H039	CM	20.03	T
			NA		

4,260

RECEIVED subject to the qualifications and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), received, consigned and destined as indicated above which under contract (the word "order" being understood to mean) this contract as bearing any present or contingent liability in possession of the property under the contract agrees to carry to its usual place of delivery or other destination. If other route, otherwise to deliver to another carrier on the route to such destination, it is mutually agreed as to each section of river any of said property, over which any portion of said route to destination and as to each, jointly or otherwise, in or on any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the uniting classification of the date of shipment. Shipper hereby certifies that the material will be kept in and condition in the foregoing classification and the addressee and consignee.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 03/01/2022
 Per: *Luis Castro* Date:

Made with "X" or "RQ" if appropriate to designate Toxic Substances or Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (4) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement provided in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exception from the requirement is provided by the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Carrie Chubodaux* Date: 4-19-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01447-3A

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN HANNOON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS HAM GLC
Street: 3414 PASSYUNKAVE
EPA ID: PAD049701000
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgment of Receipt	
Per: <i>Herman K. Packer</i>	Date: <i>4-18-22</i>

[Handwritten signature]

4-19-22

11/15/03

11/15/03

70460 G
35360 T
35100 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 1600003

WEIGHED BY _____

156108

00311447-3B

766569

Bill of Lading (Page 1 of 2)

DOCUMENT # 00311447-3B

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANFON ROAD
 EPA ID: LADD00777201
 City/State/Zip: SULLIVUR LA 70665
 Phone: (337) 689-2188

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PAD 049791 090
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 228-1524

ADDITIONAL INFORMATION

WIRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.40(a) 1241

Ticket 62015

SHIPPER'S INSTRUCTIONS

42,500

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Class	Volume	CBM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9, III (BENZENE) PROFILE: 068813LA 1M CONTAINER/ EPIU226315 RAIL CAR/ EPX 91447 ERG# 171 H039 R11	CM	21.25	T

RECEIVED subject to the classification and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unopened, received, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agree to carry to the usual place of delivery as indicated. It is the route, whether by land, water or air, to the place of destination. It is the carrier's duty to carry to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time indicated in all or any said property, that every person to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 03/01/2022 Per: Luis Castro Date: 3-1-22

Hereby "X" or "B" or "C" or "D" or "E" or "F" or "G" or "H" or "I" or "J" or "K" or "L" or "M" or "N" or "O" or "P" or "Q" or "R" or "S" or "T" or "U" or "V" or "W" or "X" or "Y" or "Z" or "AA" or "AB" or "AC" or "AD" or "AE" or "AF" or "AG" or "AH" or "AI" or "AJ" or "AK" or "AL" or "AM" or "AN" or "AO" or "AP" or "AQ" or "AR" or "AS" or "AT" or "AU" or "AV" or "AW" or "AX" or "AY" or "AZ" or "BA" or "BB" or "BC" or "BD" or "BE" or "BF" or "BG" or "BH" or "BI" or "BJ" or "BK" or "BL" or "BM" or "BN" or "BO" or "BP" or "BQ" or "BR" or "BS" or "BT" or "BU" or "BV" or "BW" or "BX" or "BY" or "BZ" or "CA" or "CB" or "CC" or "CD" or "CE" or "CF" or "CG" or "CH" or "CI" or "CJ" or "CK" or "CL" or "CM" or "CN" or "CO" or "CP" or "CQ" or "CR" or "CS" or "CT" or "CU" or "CV" or "CW" or "CX" or "CY" or "CZ" or "DA" or "DB" or "DC" or "DD" or "DE" or "DF" or "DG" or "DH" or "DI" or "DJ" or "DK" or "DL" or "DM" or "DN" or "DO" or "DP" or "DQ" or "DR" or "DS" or "DT" or "DU" or "DV" or "DW" or "DX" or "DY" or "DZ" or "EA" or "EB" or "EC" or "ED" or "EE" or "EF" or "EG" or "EH" or "EI" or "EJ" or "EK" or "EL" or "EM" or "EN" or "EO" or "EP" or "EQ" or "ER" or "ES" or "ET" or "EU" or "EV" or "EW" or "EX" or "EY" or "EZ" or "FA" or "FB" or "FC" or "FD" or "FE" or "FF" or "FG" or "FH" or "FI" or "FJ" or "FK" or "FL" or "FM" or "FN" or "FO" or "FP" or "FQ" or "FR" or "FS" or "FT" or "FU" or "FV" or "FW" or "FX" or "FY" or "FZ" or "GA" or "GB" or "GC" or "GD" or "GE" or "GF" or "GG" or "GH" or "GI" or "GJ" or "GK" or "GL" or "GM" or "GN" or "GO" or "GP" or "GQ" or "GR" or "GS" or "GT" or "GU" or "GV" or "GW" or "GX" or "GY" or "GZ" or "HA" or "HB" or "HC" or "HD" or "HE" or "HF" or "HG" or "HH" or "HI" or "HJ" or "HK" or "HL" or "HM" or "HN" or "HO" or "HP" or "HQ" or "HR" or "HS" or "HT" or "HU" or "HV" or "HW" or "HX" or "HY" or "HZ" or "IA" or "IB" or "IC" or "ID" or "IE" or "IF" or "IG" or "IH" or "II" or "IJ" or "IK" or "IL" or "IM" or "IN" or "IO" or "IP" or "IQ" or "IR" or "IS" or "IT" or "IU" or "IV" or "IW" or "IX" or "IY" or "IZ" or "JA" or "JB" or "JC" or "JD" or "JE" or "JF" or "JG" or "JH" or "JI" or "JJ" or "JK" or "JL" or "JM" or "JN" or "JO" or "JP" or "JQ" or "JR" or "JS" or "JT" or "JU" or "JV" or "JW" or "JX" or "JY" or "JZ" or "KA" or "KB" or "KC" or "KD" or "KE" or "KF" or "KG" or "KH" or "KI" or "KJ" or "KK" or "KL" or "KM" or "KN" or "KO" or "KP" or "KQ" or "KR" or "KS" or "KT" or "KU" or "KV" or "KW" or "KX" or "KY" or "KZ" or "LA" or "LB" or "LC" or "LD" or "LE" or "LF" or "LG" or "LH" or "LI" or "LJ" or "LK" or "LL" or "LM" or "LN" or "LO" or "LP" or "LQ" or "LR" or "LS" or "LT" or "LU" or "LV" or "LW" or "LX" or "LY" or "LZ" or "MA" or "MB" or "MC" or "MD" or "ME" or "MF" or "MG" or "MH" or "MI" or "MJ" or "MK" or "ML" or "MM" or "MN" or "MO" or "MP" or "MQ" or "MR" or "MS" or "MT" or "MU" or "MV" or "MW" or "MX" or "MY" or "MZ" or "NA" or "NB" or "NC" or "ND" or "NE" or "NF" or "NG" or "NH" or "NI" or "NJ" or "NK" or "NL" or "NM" or "NN" or "NO" or "NP" or "NQ" or "NR" or "NS" or "NT" or "NU" or "NV" or "NW" or "NX" or "NY" or "NZ" or "OA" or "OB" or "OC" or "OD" or "OE" or "OF" or "OG" or "OH" or "OI" or "OJ" or "OK" or "OL" or "OM" or "ON" or "OO" or "OP" or "OQ" or "OR" or "OS" or "OT" or "OU" or "OV" or "OW" or "OX" or "OY" or "OZ" or "PA" or "PB" or "PC" or "PD" or "PE" or "PF" or "PG" or "PH" or "PI" or "PJ" or "PK" or "PL" or "PM" or "PN" or "PO" or "PP" or "PQ" or "PR" or "PS" or "PT" or "PU" or "PV" or "PW" or "PX" or "PY" or "PZ" or "QA" or "QB" or "QC" or "QD" or "QE" or "QF" or "QG" or "QH" or "QI" or "QJ" or "QK" or "QL" or "QM" or "QN" or "QO" or "QP" or "QQ" or "QR" or "QS" or "QT" or "QU" or "QV" or "QW" or "QX" or "QY" or "QZ" or "RA" or "RB" or "RC" or "RD" or "RE" or "RF" or "RG" or "RH" or "RI" or "RJ" or "RK" or "RL" or "RM" or "RN" or "RO" or "RP" or "RQ" or "RR" or "RS" or "RT" or "RU" or "RV" or "RW" or "RX" or "RY" or "RZ" or "SA" or "SB" or "SC" or "SD" or "SE" or "SF" or "SG" or "SH" or "SI" or "SJ" or "SK" or "SL" or "SM" or "SN" or "SO" or "SP" or "SQ" or "SR" or "SS" or "ST" or "SU" or "SV" or "SW" or "SX" or "SY" or "SZ" or "TA" or "TB" or "TC" or "TD" or "TE" or "TF" or "TG" or "TH" or "TI" or "TJ" or "TK" or "TL" or "TM" or "TN" or "TO" or "TP" or "TQ" or "TR" or "TS" or "TT" or "TU" or "TV" or "TW" or "TX" or "TY" or "TZ" or "UA" or "UB" or "UC" or "UD" or "UE" or "UF" or "UG" or "UH" or "UI" or "UJ" or "UK" or "UL" or "UM" or "UN" or "UO" or "UP" or "UQ" or "UR" or "US" or "UT" or "UU" or "UV" or "UW" or "UX" or "UY" or "UZ" or "VA" or "VB" or "VC" or "VD" or "VE" or "VF" or "VG" or "VH" or "VI" or "VJ" or "VK" or "VL" or "VM" or "VN" or "VO" or "VP" or "VQ" or "VR" or "VS" or "VT" or "VU" or "VV" or "VW" or "VX" or "VY" or "VZ" or "WA" or "WB" or "WC" or "WD" or "WE" or "WF" or "WG" or "WH" or "WI" or "WJ" or "WK" or "WL" or "WM" or "WN" or "WO" or "WP" or "WQ" or "WR" or "WS" or "WT" or "WU" or "WV" or "WW" or "WX" or "WY" or "WZ" or "XA" or "XB" or "XC" or "XD" or "XE" or "XF" or "XG" or "XH" or "XI" or "XJ" or "XK" or "XL" or "XM" or "XN" or "XO" or "XP" or "XQ" or "XR" or "XS" or "XT" or "XU" or "XV" or "XW" or "XZ" or "YA" or "YB" or "YC" or "YD" or "YE" or "YF" or "YG" or "YH" or "YI" or "YJ" or "YK" or "YL" or "YM" or "YN" or "YO" or "YP" or "YQ" or "YR" or "YS" or "YT" or "YU" or "YV" or "YW" or "YZ" or "ZA" or "ZB" or "ZC" or "ZD" or "ZE" or "ZF" or "ZG" or "ZH" or "ZI" or "ZJ" or "ZK" or "ZL" or "ZM" or "ZN" or "ZO" or "ZP" or "ZQ" or "ZR" or "ZS" or "ZT" or "ZU" or "ZV" or "ZW" or "ZX" or "ZY" or "ZZ"

Designated Consignee: Chemical Waste Management, Inc. Certification of receipt of materials

Per: Carrie Dubodreau Date: 7-20-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91447-36

TO _____ FROM _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7470 JOHN BRANNON ROAD
EPA ID: LA0000777001
City/State/Zip: SULPHUR LA 70065
Phone: (337) 603-2188

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049701 000
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 220-1824

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2189	
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: <i>4-19-20</i>

Handwritten notes or numbers at the top of the page.

1291 3 20 5 300-6018
11 0000 14 21 000

69420 G
34740 T
34680 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

Handwritten initials or mark.

RECEIVING TICKET # 766569

WEIGHED BY _____

00911441-3C

153213

766492

Bill of Lading (Page 1 of 2)

DOCUMENT ID 91447-3C

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA000027201
 City/State/Zip: SUITLAND, LA 70065
 Phone: (337) 503-2100

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 019701 003
 City/State/Zip: PHILADELPHIA, PA 19115
 Phone: (410) 228-1624

ADDITIONAL INFORMATION
 VINE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241
 Ticket 102016

SHIPPER'S INSTRUCTIONS

40,160

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (AC/N/ENG) PROFILE: 809043LA	CM	20.08	T
		1M CONTAINERS# EPIX25231			
		RAIL CAR# EPIX 91447			
		FROM 171 HUSD			

RECEIVED subject to the disclaimers and limits in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted hereon and condition of packages unknown, checked, counted and found as indicated above with a bill of lading (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on a date, different to that in another contract on the route to said destination it is mutually agreed as to each carrier of rail or any of said property, that any or any portion of said goods to destination and as to each party of any line involved in or any said property, that every consignment forwarded shall be subject to all the B/L of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 03/01/2022
 Per: Luis Castro Date: 4-14-22

Mark with "X" or "RQ" if applicable to designate Hazardous Materials. Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.231 (b)(1) (6) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.234(a) of the Federal Regulations, as indicated on this Bill of Lading does not apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Confirmation of receipt of materials
 Per: Carrie Chubodeaux Date: 4-14-22


Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91447-3C

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2109

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 8144 PABST DRIVE
EPA ID: PAD 049701 090
City/State/Zip: PHILADELPHIA, PA 19149
Phone: (480) 220-1624

Carrier 2 BNSF Railway Company	
Acknowledgment of Receipt	
For:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (RDI) 330-2169
Acknowledgment of Receipt	
For: 	Date: 4/14/22

627

73940 G
33640 T
40300 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 116111

WEIGHED BY _____

1053004

03/01/22-30

766522

Bill of Lading (Page 1 of 2)

DOCUMENT # 91447-3D

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Special: 7470 JOHN BRANNON ROAD	
EPA ID: LA000077201	
City/State/Zip: SULPHUR LA 70665	
Phone: (337) 583-2469	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3141 PASSYUNK AVE	
EPA ID: PAD 049791 088	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 220-4024	

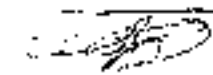
ADDITIONAL INFORMATION	
WIRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.11(a) 1241	
Ticket 12017	

SHIPPER'S INSTRUCTIONS	

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B.III (BENZENE) PROFILE: 8698431A IN CONTAINER# EPTU26246 RAIL CAR# REX 9447	GM	21.25	T
		EPGR 174 11030 OH			

42,500

REMOVED in light of the classifications and rules in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the vessel carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of or on any of said property, over all or any portion of said route to destination and as to each party in any time indicated in all or any said property, that every article to be so transported hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
Per: 	Date: 03/01/2022
Per: Luis Castro	Date: 3-1-22

Mark with "X" or "H" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an option provided for identifying hazardous materials on Bills of Lading 172.201(a)(4)(B) of Title 49, Code of Federal Regulations, Part 172, when shipping hazardous materials. The shipper's certification is not intended in violation 172.204(e) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirements is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: Carrie Cumberland	Date: 4-14-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91447-301

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7176 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SHILLINGTON, VA 20855
Phone: (337) 583-2160

Shipper: PHILADELPHIA ENERGY SOLUTIONS RRM LLC
Street: 3146 PASSYUNK AVE
EPA ID: PAD 049791 000
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 271-1521

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Prn:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2160	
Acknowledgement of Receipt	
Prn: <i>Joseph [Signature]</i>	Date: 4/19/2022

Handwritten notes at the top right of the page.

Handwritten notes below the top right notes.

...	...	78120 G
...	...	35660 T
...	...	42260 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____ *(Handwritten Signature)*

WEIGHED BY _____

0001441-3E

W532104

Bill of Lading (Page 1 of 2)

DOCUMENT # 01447-3E

766541

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7176 JOHN BRANNON ROAD
 CPA ID: LA0000777201
 City/State/Zip: SULPHUR LA 70086
 Phone: (337) 503-7188

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASEYUNKAVE
 EPA ID: PA0 D10741 010
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (484) 220-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.101 1241

Ticket 62018

SHIPPER'S INSTRUCTIONS

40,500

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 0. III (BENZENE) PROFF F: H89M3LA IM CONTAINER# CHU225126 RAIL CAR# EPX 91447	CM	23.25	T
		ERG# 171 H033 NH			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is shipped under contract, except as noted (contents and condition of packages unknown), marked, classified and destined as indicated above which said contract (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. It is understood, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over any and every portion of said route to destination, and as to each party of any line interested in all or any and property, that every service to be performed hereunder shall be subject to all the published tariffs and conditions in the governing classification and the date of shipment. Shipper hereby certifies that he is familiar with the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Date: 03/01/2022
 For: Luis Castro
 (init):

Mark with "X" or "RC" if applicable to describe Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on bills of lading 49 CFR 171.15 (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 For: Carrie Embold
 Date: 4-18-22

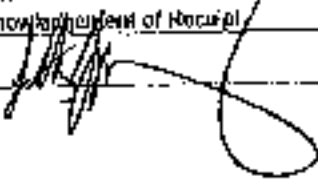
Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 814473E

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: GOLPHUR LA 70665
Phone: (337) 583-2188

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PAD 040701 006
City/State/Zip: PHILADELPHIA, PA 19109
Phone: (480) 220-1621

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2168	
Acknowledgement of Receipt	
Per: 	Date: 4-18-22

EP10

UNIVERSITY MICROFILMS
SERIALS ACQUISITION
300 N ZEEB RD
ANN ARBOR MI 48106

76900 G
38100 T
40800 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 76605411

WEIGHED BY _____

P 9

Handwritten signature

0041447-3F

766570

Bill of Lading (Page 1 of 2)

DOCUMENT# 91447-3F

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7179 JOHN BRANNON ROAD	
EPA ID: LAH000772201	
City/State/Zip: SULPHUR LA 70665	
Phone: (337) 503-2109	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PA0400791088	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (484) 928-1524	

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticket 62019

SHIPPER'S INSTRUCTIONS

40,200

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF MATERIALS SPECIAL MARKS & EXCEPTIONS	Type	Volume	WGT
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, H.O.S., 9, III (BENZENE) PROVIDE: 9892431A IM CONTAINER# EPIU225109 RAIL CAR# EPK791471 ERG# 171 H038	ORM	20.10	T

RECEIVED subject to the conditions and terms in effect on the date of the issue of this Bill of Lading, the property described above is accepted, packed, sealed, secured, and condition of packages unknown, received, counted and certified as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as well as to make, to the extent, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each copy of all copies of said property, over all or any portion of said route to destination and as to each party of any line interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is in order with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: CSX Railroad Corp
For: <i>[Signature]</i>	Date: 03/01/2022
For: <i>Luis Castro</i>	Date: 3-1-22

This bill of lading is subject to the conditions and terms in effect on the date of the issue of this Bill of Lading, the property described above is accepted, packed, sealed, secured, and condition of packages unknown, received, counted and certified as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as well as to make, to the extent, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each copy of all copies of said property, over all or any portion of said route to destination and as to each party of any line interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is in order with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
For: <i>Carrie Chubodeaux</i>	Date: 4-20-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81447-3F

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC.
Street: 7176 JOHN BRANNON ROAD
EPA ID: LA0000777204
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583 2180

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNKAVE
EPA ID: PA0049794088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (481) 228-4524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2160
Acknowledgement of Receipt	
Per: <i>Joseph Courville</i>	Date: <i>4/18/2022</i>
<i>Vernon K Paul</i>	<i>4-19-22</i>

6/14/2007

1000
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1000

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65700 G
33460 I
32240 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET #

7000570

WEIGHED BY

00011009-444

766453

Bill of Lading (Page 1 of 2)

DOCUMENT # B1089-4A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC

Street: 7170 JOHN BRANNON ROAD

EPA ID: LA0000777201

City/State/Zip: SLIPHUR LA 70685

Phone: (337) 503-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3141 PASSYUNK AVE

EPA ID: PAD 11097H1 090

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (480) 225-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.46(f) 1241

Tanks 42026

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF MATERIALS SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RQ, UN2807, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B.III (BENZENE) PROPANE; 009B431A IM CONTAINER EPIJ225308 RAIL CAR# EPIX 91069 ERG# 171 1439 NH	CM	38,360 19.18	Y

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), is hereby consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, under all or any portion of said route to conform thereto to each party of any time hereafter in all or any such respects, that every advice to be performed hereunder shall be subject to the Bill of Lading terms and conditions in the governing classification of the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 03/01/2022

Per: *Luis Castro* Date: 3/1/22

Mark with "X" or "RQ" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading. 49 CFR 171.15(b)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement provided in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exception from the requirement is provided in the Regulation for a particular hazard.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Per: *Belinda Spivey* Date: *4/1/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91689-1A

TO.....FROM

Consignee: CHEMICAL WASTE MANAGEMENT <i>Inc</i>
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077/201
City/State/Zip: SULLY, MO. 64686
Phone: (337) 685-2168

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA00045781 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1574

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Norman Paul</i>	Date: <i>4-17-20</i>

5 (111) 23 508
TUESDAY

10 613204
61-000 72900 101884800
10:4942 04/12/2022

008300 10511 51

613 72900 Th 101884800 72900 G
648 76770 35 35320 T
04 76680 118 37660 N

04 18.15 1001

04 14:00 04:12 1002

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BHANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 70665153
WEIGHED BY _____

052215

0091009-4B

766457

Bill of Lading (Page 1 of 2)

DOCUMENT # 91009-4B

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN DRANNON ROAD	
EPA ID: LAD000777201	
City/State/Zip: SULPHUR LA 70685	
Phone: (337) 583-2189	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNICAVE	
EPA ID: PAU 049791 090	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 228-1524	

ADDITIONAL INFORMATION	
VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241	
Ticket (202)	

SHIPPER'S INSTRUCTIONS	

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	40,760		UCM
			Type	Volume	
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) PROFILE: 8000431A IM CONTAINER# EPIU225146 RAIL CAR# EPIX 91069 ERG# 174 H039 AJH	CM	20.98	T

RECEIVED subject to the class placards and labels in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unopened), marked consignment destined as indicated above which said carrier (the word carrier being understood through this contract to include any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver in weather events on the route to said destination, the mutually agreed on to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party as any time incurred in all or any said property, that every service to be performed thereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	Carrier: GSX Railroad Corp
Per: <i>[Signature]</i>	Date: 03/01/2022
Per: <i>Luis Castro</i>	Date: 03/01/22

Mark with "X" or "RC" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for designating hazardous materials on Bills of Lading 172.901(a)(1) 40 CFR 171.18, Code of Federal Regulations, Also, when shipping hazardous materials, the shipper's certification statement pursuant to section 172.901(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc	Certification of receipt of materials
Per: <i>[Signature]</i>	Date: 4-12-22

266457

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91069-4B

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049751 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (610) 278-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgment of Receipt	
Per: <i>[Signature]</i>	Date: 4.12.22

110

EXCIT 54

10 110
GROSS 74760 10 TARE
NET 40780 10 TARE

QTY	WT	UNIT	CODE
10	74760	LB	74760 G
10	33980	LB	33980 T
10	40780	LB	40780 N
10	10,780	LB	
10	10,780	LB	

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 110

WEIGHED BY _____

11/21/25

W11004-4C

1666430

Bill of Lading (Page 1 of 2)

DOCUMENT# 91069-4C

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC

Street: 7170 JOHN BRANNON ROAD

EPA ID: LA000077201

City/State/Zip: SULPHUR LA 70665

Phone: (337) 683-2769

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3144 PASSYUNK AVE

EPA ID: PAD 049791 000

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (480) 228-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1211

Talent 6/2028

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	HC, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 0.1% (BENZENE) PROFILE: 9998431 A	CM	19.73	T
		IN CONTAINERS EPIU225274			
		RAIL CAR EPIX 91069			
		ERG# 171 H039			

39,460

RECEIVED subject to the consignor's and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), packed, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract to mean any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. It en route, consignor is liable to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in it or any part thereof, that every device to be performed hereunder shall be subject to the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 03/01/2022

Per: Luis Castro Date: 3/1/22

Mark with "X" or "HC" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of "CM" column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (i) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exception from the requirement is provided in the regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Per: Yolanda Spicer Date: 4/12/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT # 91069-40

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7178 JOHN BRANSON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70885
Phone: (337) 583-2169

Inc

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAC 045793 000
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt:	
Part:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147777 (800) 336-2169	
Acknowledgement of Receipt:	
Part: <i>Joseph Cornille</i>	Date: <i>4/12/2022</i>

EPIA 2250 11

0001 22

TO: P3355
FROM: T4000 (b) (6) (C)
DATE: 04/19/2022

RECEIVED TICKET # 12

123	T-4000	DR-RECEIVED	74800 G
124	T-4000	DR	36500 T
125	T-4000	DR	38700 N
126	T-4000	DR	
127	T-4000	DR	

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 7600130

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

053004
WILSON - PA
766428

DOCUMENT# 91069-411

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAU00077201
 City/State/Zip: SULPHUR LA 70085
 Phone: (937) 683-2189

Inc

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVENUE
 EPA ID: PAD 049791 098
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (480) 228-1024

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.46(a) 1241

Ticket 62029

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	HQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9 III (BENZENE) PROFILE: 065243LA	CM	12.48	T
		IN CONTAINER# FPIU225355			
		RAIL CAR# EPX 91069			
		EIC# 171 H039	NH		

38,960

RECEIVED subject to the classification and tariffs in effect on the date of the issue of this Bill of Lading, the property described herein in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the vessel carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on its route, it is required to deliver to another carrier on the route to said destination, it is jointly and severally liable to each owner of all or any of said property, over all or any portion of said route to destination and as to each party at any time hereunder in all or any said property, that every transfer to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 03/01/2012
 Per: *Luis Castro* Date: 3/1/22

Made with "X" or "40" if appropriate in designating Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this notation is an option intended for identifying hazardous materials on bills of lading. 172.201 (a)(3) (iv) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204 (a) of the Federal Regulations, as indicated on the bill of lading does apply, unless a specific exemption from that requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

Colinda Spicer Date: *4/12/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81089-4D

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN DRANNON ROAD
EPA ID: LA000777201
City/State/Zip: SULPHUR LA 70805
Phone: (337) 683-7169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNICAVE
EvA ID: PAD 049791 096
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt:	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA000D147272 (R00) 338-2169	
Acknowledgment of Receipt:	
Per: <i>[Signature]</i>	Date: <i>4-12-22</i>

68166-10231

DATE: 07

03 057209
GROSS: 74000 05/18/03 050
NET: 38880 05/12/2003

RECEIVED TICKET # 07

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0300	05000	05		38880 N
0400	05000	05		
0500	05000	05		

CHEMICAL WASTE MANAGEMENT, INC
7170 JOHN BRANNON ROAD
SULPHUR, LA 70885

RECEIVING TICKET # 7100428

WEIGHED BY _____

Bill of Lading (Page 1 of 2)

0041004-4E 766455

766455

DOCUMENT# 91069-4F

TO *ENC*

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LADK00777205
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 503-2188

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PAD 049781 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 226-1524

ADDITIONAL INFORMATION

WRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.46(a) 1241

Total 62030

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.111 (BENZENE) PROFILE: 569842CA IM CONTAINER# EPIU22832B RAIL CAR# EPIX <i>91069</i> ER# 171 H039 PH	CM	20.33	T

40,660

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), received consigned and received as indicated above which said carrier (the vessel carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery or destination, if on its route, otherwise to deliver, another carrier on the route to said destination, if it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each carrier of any intermediate in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that this is in full compliance with the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Date: *03/01/2022*
 Per: *Luis Castro*
 Date: *01/1/22*

Mark with "X" or "HC" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this concern is an optional method for identifying hazardous materials on Bills of Lading 112.201(a)(1) (2) of the 49 C.F.R. Code of Federal Regulations, Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 112.201(a) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignor: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Belinda Spicer*
 Date: *4/12/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 010094E

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC <i>INC</i>
Street: 7175 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 503-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (600) 386-2169
Acknowledgement of Receipt	
Per: <i>Joseph Estrada</i>	Date: <i>9/11/2002</i>

10557 52

IF 857115.
GROSS 25780 IN 1000000
TARE 60000 06/12/2022

00000000 11351 52

gross	25780	lb	94000	lb	75780	G
gross	25780	lb			35280	T
net	60000	lb			40520	N

net 60000 lb

06/12/2022

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 1006495

WEIGHED BY _____

10315

0011001-41

Title 434

Bill of Lading (Page 1 of 2)

DOCUMENT # 91089-1F

TO

Consignee: CHEMICAL WASTE MANAGEMENT, INC
 Street: 7176 JOHN BRANNON ROAD
 EPA ID: LA000077201
 City/State/Zip: SULPHUR LA 70865
 Phone: (337) 503-2168

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 090
 City/State/Zip: PHILADELPHIA, PA 19115
 Phone: (480) 228-1624

ADDITIONAL INFORMATION

VME TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1244

Tidus (203)

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RD UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9. III (BENZENE) PROFILE: 8898431A	CM	19.83	T
		IM CONTAINERS EPIU226391			
		RAIL CARN EPIX 91069			
		ERG# 171 H030			

39,260

RECEIVED subject to the definitions and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is accepted and shipped, except as noted (origins and condition of packages included), packed, consigned and delivered as indicated above which said carrier, the said carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract, agrees to carry to the usual place of delivery as said destination. If on its route, otherwise to deliver to another carrier on its route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party in any time interested in all or any said property, that every carrier to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Port: *[Signature]* Date: 03/01/2022
 For: *Luis Castro* Date: 3/1/22

Mark with "X" or "RD" as appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this symbol is an optional method for marking hazardous materials on Bills of Lading 172.201(a)(1)(B) of the 49 CFR Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certified statement prescribed in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials

Per: *Belinda Spicer* Date: *4/12/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 61009-4F

TO... FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC <i>JTC</i>
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777291
City/State/Zip: SLI PHUR LA 70685
Phone: (337) 433-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASEYUNKAVE
EPA ID: PAD 049791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1534

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Recd:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Recd: <i>[Signature]</i>	Date: <i>4-12-22</i>

W53015

W11484-4H

766479

Bill of Lading (Page 1 of 2)

DOCUMENT # 91484-4A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC *inc*
 Street: 7470 JOHN BRANNON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SLIPHUR LA 70965
 Phone: (337) 693-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3146 PASSYUNKAVI
 EPA ID: PAD 048701 098
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (410) 220-1524

ADDITIONAL INFORMATION

VRC TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticks 62006

SHIPPER'S INSTRUCTIONS

38,800

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.C.S. 8. III (BENZENE) <i>PROFILE 3098431A</i>	DM	19.40	T
		IM CONTAINER# EPIU229261			
		RAIL CAR# EPIK81484			
		ERG# 171 H008 <i>NA</i>			

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is approved for transport, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which sale carrier (the said carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination, via its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of either party of said property, over all or any portion of said route to destination and as to each party of any line interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions for the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 03/01/2022
 Per: *Lucia Castro* Date: *3/1/22*

Marking "X" or "RC" is appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on an Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Belinda Spencer* Date: *4/13/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91484-4A

TO: THOM

Consignee: CHEMICAL WASTE MANAGEMENT, Inc
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: BULPHUR LA 70866
Phone: (337) 683-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 8644 PASSYUNK AVE
EPA ID: PAD 049791 090
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	LA0000147272 (860) 336 2189
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: 4-13-22

CYU 00001
TICKET 38

TO: 653375
GROSS 72560 lb
NET 34080 lb
DATE 04/13/2002

DATE	TIME	BY	WEIGHT
04/13/02	10:00	BRANDON	72560 G
04/13/02	10:00	BRANDON	34080 T
04/13/02	10:00	BRANDON	38480 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 7166479

WEIGHED BY _____

1053108

0041484-4B

766497

Bill of Lading (Page 1 of 2)

DOCUMENT # 91484-4B

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA000977201	
City/State/Zip: SUITPHUR LA 70085	
Phone: (337) 503-2160	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASBYUNKAVE	
EPA ID: PAD 019791 000	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 220-1524	

ADDITIONAL INFORMATION	
VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) (2)(1)	
<i>Tributo 62001</i>	

SHIPPER'S INSTRUCTIONS	

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. B III (BENZENE) PROFILE: B89843LA IM CONTAINER# EPI028345 RAIL CAR# EPIX91484 ERG# 171 11039 <i>DM</i>	GM	20.55	T

41,100

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word "carrier" being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. It is its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party of any time interested in it or any said property, that every service to be performed hereunder shall be subject to ALL the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC		Carrier: CSX Railroad Corp	
Per: <i>[Signature]</i>	Date: 03/01/2022	Per: <i>Luca Castro</i>	Date: 4-14-22

Mark with "X" or "RD" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation's Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.204(c)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification agreement prescribed in section 172.204(n) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc		Certification of receipt of materials	
Per: <i>Carrie Ambrose</i>	Date: 4-14-22		

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91484-4B

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC.
Street: 7170 JOHN BRANMON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3141 PASSYUNK AVE
EPA ID: PAD 048791 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-5424

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Allen Vincent</i>	Date: <i>4.18.20</i>

EPH000 345
MAY 20

TO: 633169
ADDRESS: 75790 TELEPHONE:
CITY: 047147492

1100
1100

L1160 net

15180
~~24120~~
41160

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 766491

WEIGHED BY _____

11/1/27

452108

OUX11484-4C

766471

Bill of Lading (Page 1 of 2)

DOCUMENT# 91484-4C

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC

Street: 7170 JOHN BRANNON ROAD

EPA ID: LAD000777291

City/State/Zip: SULPHUR LA 70066

Phone: (337) 583-2109

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3144 PASSYUNICAVE

EPA ID: PA0 049791 000

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (410) 220-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

T. Davis 6/2008

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE)	CM	20.75	T
		PROFILE: 009843LA			
		IM CONTAINER# EPRU220084			
		RAIL CARN# EPRU91481			
		ERG# 171			
		HAZ99			

4,500

RECEIVED subject to the classifications and limits in effect on the date of the issue of this Bill of Lading, the property described above is shipped in good order, except as noted (contents and condition of packages unknown), marked, confined and destined as indicated above which said carrier (who was carrier being designated through this contract as marking any seizure or cooperation in prosecution of this property under the contract) agrees to carry to its next place of delivery as said destination. If on its route, otherwise to deliver to another carrier on the route to said destination it is mutually agreed by the carrier of it or any of said property, over all or any portion of said route to destination and as to each party at any time interested by it or any, said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 03/01/2022

Per: *Luis Castro* Date: 3/1/22

Mark with "X" or "RQ" as applicable to designate flammable materials. Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bill of Lading 172.201(a)(1)(4) of 49 CFR 172.40. Code of Federal Regulations. Also, when shipping the above materials, the shipper's certification statement prescribed in section 172.201(a) of the Federal Regulations, as indicated on this Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Per: *Alita Vincent* Date: 4.13.22

Belinda Spicer 4/13/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91484-10

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC.
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: ST. LOUIS, MO 63103
Phone: (314) 588-2160

Jrc

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M L.L.C.
Street: 3144 PASSYUNK AVE
EPA ID: PAD 049791 088
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (484) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2160
Acknowledgement of Receipt	
Per: <i>Allen Vincent</i>	Date: <i>4.13.22</i>

5114-1-1-07
TICKET #

NO. 055168
ADDRESS 76780 DUNBOURG
MO. TEL# 661-67022

RECEIVED TICKET #

WGT	5,250 LB	RECEIVED	76280 G
DATE	06/27/07		35340 T
BY	06/28/07		40940 N

NO. 055168

ADDRESS 76780 DUNBOURG

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SUI PHUR, LA 70665

RECEIVING TICKET # 76280 71

WEIGHED BY _____

153315
 Bill of Lading (Page 1 of 2)

0091484-HW

766464

DOCUMENT # 91484-4D

TO
 Designation: CHEMICAL WASTE MANAGEMENT, Inc
 Street: 7770 JOHN BRANNON ROAD
 EPA ID: LA000077201
 City/State/Zip: SULLIVAN, LA 70665
 Phone: (337) 603-2109

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNICAVE
 EPA ID: PAD 040791 090
 City/State/Zip: PHILADELPHIA, PA 19115
 Phone: (480) 220-1624

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.111 1241
 Filed 6/20/09

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.III (BENZENE) PROFILE: 95B043LA IM CONTAINERS# FPLU225111 RAIL CARR# EPX01484 ERG# 174 H030 NH	CM	19.55	T

39/100

RECEIVED subject to the classification and terms in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, counted and analyzed as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If no route, otherwise to deliver to another carrier en route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in such any said property, that every service to be rendered hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the markings and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 03/01/2022
 Per: Luis Castro Date: 3/1/2022

Mark with "X" or "OC" if appropriate to designate Hazardous Material Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for designating hazardous materials on Bills of Lading 49 CFR 171.201(c) (1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement provided in section 171.201(a) of the Federal Regulations, as indicated on the Bill of Lading does not, unless a specific exception from the requirement is provided to the Regulator for a particular shipment.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Blinda Spicar* Date: 4/13/20

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 01484-4D

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT, INC. <i>JNC</i>
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SHILPHUR LA 70065
Phone: (337) 583-2199

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA00049791090
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (484) 220-1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 338-2169	
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: <i>4.13.22</i>

51100000

TICKET 11

00 853375

DATE: 7/30/00 063045160

TIME: 7:40 PM 07/13/2022

00100000 33821 11

WGT	73000	00	11006100	73000 G
WGT	33940	00		33940 T
WGT	39060	00		39060 N
WGT	1953	0000		
DATE	07-13-2022			

CHEMICAL WASTE MANAGEMENT, INC.
 7170 JOHN BRANNON ROAD
 SULPHUR, LA 70665

RECEIVING TICKET # 7600000

WEIGHED BY _____

053204

0041484-4E

766490

Bill of Lading (Page 1 of 2)

DOCUMENT # 91484-4E

TO	
Consignee: CHEMICAL WASTE MANAGEMENT INC	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LAD000777201	
City/State/Zip: SUDBURY IA 52885	
Phone: (337) 583-2169	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 048791 058	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 220-1524	

ADDITIONAL INFORMATION	
VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241	
TICKETS 62010	

SHIPPER'S INSTRUCTIONS	

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES, SPECIAL MARKS & EXCEPTIONS	41,400		USCM
			Type	Volume	
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE)	CM	20.70	1
		PROFILE: 0590431A			
		IM CONTAINER# FPLU225288			
		RAIL CAR# EPIX91484			
		ERG# 171 H038 NH			

RECEIVED subject to the classifications and limits in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, counted and destined as indicated above with a solid carrier. The word carrier being understood through this contract, as meaning any person or corporation in possession of the property under the contract agrees to carry to the usual place of delivery or said destination. If on its route, otherwise by default to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and at each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that no is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC		Carrier: CSX Railroad Corp	
Per:	Date: 03/01/2022	Per: Luis Castro	Date: 3-1-22

Mark with "X" or "RD" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for designating hazardous materials on Bills of Lading 172.201 (a)(1)(ii) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204 (a) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignor: Chemical Waste Management, Inc		Certification of receipt of materials	
Per: Carrie Ambrose	Date: 3-14-22		

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81484-6E

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2109

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&Y LLC
Street: 5141 PASSYUNK AVE
EPA ID: PA10 C49781 400
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2109
Acknowledgement of Receipt	
Per: <i>Joseph Commins</i>	Date: <i>4/19/2022</i>

C-114

TICKET 19

TO: 855204
CAGS 73960 111840000
CAGS 04/14/2022

RECEIVING TICKET 19

78860 G	78860 G
35560 T	35560 T
41300 N	41300 N

41300 N

04/14/2022

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

766490

RECEIVING TICKET # _____

WEIGHED BY _____

152907
 Bill of Lading (Page 1 of 2)

0021484-4F

766470

DOCUMENT # 01484-4F

TO
 Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7570 JOHN JARRANON ROAD
 EPA ID: LAD000777201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 563-2108

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3164 PASSYUNICAVE
 EPA ID: PAD 019791 DBB
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (484) 228-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.11(a) 1244
 Ticket 62011

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF MATERIALS SPECIAL MARKS & EXCEPTIONS	40,860		LCM
			Type	Volume	
X	1	RO, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9.1 (BENZENE) PROFILE: 950843LA IRI CONTAINER# EPIU225348 RAIL CAR# EPIXB1494 ERG# 171 H030 NH	GM	20.43	T

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above is accepted in good order, except as noted (contents and condition of packages unknown), marked, crated, packed, secured and delivered as requested above upon bill carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery or safe destination. If on its route, otherwise to deliver to another carrier on the route to its destination, it is mutually agreed as to bill carrier of part or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every contract in the performance hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 03/01/2022 Rec: Luis Castro Date: 3/1/22

Mark with "X" or "P" appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bill of Lading 172.201(a)(1) of Title 49, Code of Federal Regulations, also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, or indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulations for particular materials.

Designated Consignee: Chemical Waste Management, Inc Certification of Receipt of Materials

Per: *Belinda Spruce* Date: 4/13/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91484-1F

TO FROM

JM
Consignee: CHEMICAL WASTE MANAGEMENT
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAC00077201
City/State/Zip: SULLY, IA 50685
Phone: (319) 693-2109

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 010291 990
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgement of Receipt	
Per: <i>Joseph Connors</i>	Date: <i>4/13/2022</i>

EVI022540

TICKET #

TO: 655204
ADDRESS: 75780 INDIANOLA
11-15-98 06/13/2022

ORIGINATOR TICKET #

ADN	75780	IN	REMILED	75780	G
TGP	35540	IS		35540	T
DEI	40240	JO		40240	N

DATE: 20.12.08

TIME: 09:15:00

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SUL PHUR, LA 70665

RECEIVING TICKET #

7606170

WEIGHED BY

1003155

DOH45-447 1102400
766404

Bill of Lading (Page 1 of 2)

DOCUMENT # 91405-4A

TO

Consignee: CHEMICAL WASTE MANAGEMENT **INC**
 Street: 7100 JOHN BRANNON ROAD
 EPA ID: LAD000077201
 City/State/Zip: SUITPHUR LA 70685
 Phone: (337) 583-2158

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 3144 PASSYUNICAVE
 EPA ID: PA0048751098
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 220-1624

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.201 1241

Ticks Group

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RO, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.III (BENZENE) PROFILE: 965843LA IN CONTAINER# EPIU225384 RAIL CAR# EPIX91406 ENGR 171 H030 <i>N/A</i>	GM	24.35	1

RECEIVED subject to the descriptions and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order (except as noted (ports and condition of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation or partnership) of the property under the contract) agrees to carry in its usual place of delivery as indicated above. It is hereby agreed to in each container of or any of said property, over all or any portion of said route to destination and to each party of way (also indicated in all or any of said property, that every service to be performed hereunder shall be subject, in all the Bill of Lading terms and conditions, to the governing classification and the conditions and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 3/7/22
 Per: *Luis Castro* Date: 3/8/22

Mark with "X" or "TRU" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this notation is an optional method for identifying hazardous materials on Bills of Lading. 49 CFR 172.204 (a)(1) (b) of Title 49, Code of Federal Regulations, Area, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does not apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc. Certification of receipt of materials

Per: *Belinda Spicer* Date: 4/11/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91405-4A

TO: FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2169

Inc

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0040781020
City/State/Zip: PHILADELPHIA, PA 19125
Phone: (480) 220-5524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt:	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc LA0000147272 (800) 338-2169	
Acknowledgement of Receipt:	
Per: <i>Joseph Councils</i>	Date: <i>4/11/2022</i>

11/11/99

11/11/99

11/11/99	11/11/99	84760 G
11/11/99	11/11/99	35960 T
11/11/99	11/11/99	48300 H

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 760406

WEIGHED BY _____

153155

W1110-415
A 766414

Bill of Lading (Page 1 of 2)

DOCUMENT # 91405-4B

TO
 Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 1170 JOHN BRANNON ROAD
 EPA ID: LA000077201
 City/State/Zip: SULPHUR LA 70665
 Phone: (337) 683-2169

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 096
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 220-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED PER THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(b) 1241
 Title: 60419

CARRIER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	NO. 13N3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.10 (BENZENE) PROFILE: 889043LA IM CONTAINER# EP1U226170 RAIL CAR# EPIXB1405 ERG# 171 H030 NH	GM	21.03	T

RECEIVED subject to the conditions specified in effect on the date of the issue of this Bill of Lading, the property described above in approval (and order, except as noted) contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. It shall route, otherwise to deliver to another carrier on the route to said destination, if it is duly agreed as to each carrier of all or any of said property, over all or any portion of said route to meet after and as to each party of any time involved in all or any said property, that every consignor hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that the information on this Bill of Lading complies with the provisions of the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 3/7/22
 Per: *Luis Castro* Date: 3/8/22

Mark with "X" or "DOT" appropriate to the main Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on bills of lading (49 CFR 172.201(a)(3)) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper shall verify that the classification is provided in section 172.201(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the regulation is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Belinda Spuar* Date: *4/11/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91605-473

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC. <i>IRC</i>
Street: 7170 JOHN BRANNON ROAD
EPA ID: LAD000777201
City/State/Zip: SUITSMIR LA 70155
Phone: (337) 563-2166

Shipper: PHILADELPHIA ENERGY SOLUTIONS RBM LLC
Street: 3144 PASSYUNKAVE
EPA ID: PA0049781 008
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LAD000147272 (800) 336-2169
Acknowledgment of Receipt	
Per: <i>[Signature]</i>	Date: <i>4/11/02</i>

DRIVER

Joseph Cowie

CO DRIVER



WASTE MANAGEMENT

 CWM TRANSPORTATION - LAKE CHARLES
 7170 JOHN BRANNON RD.
 SUITE 100, LA 70063
 (800) 335-7100

CUM

TRANSPORTER

260420

SERVICE ORDER

PROFILE NUMBER	969843LA	START TRIP LOCATION	Sulphur LA	DATE	4/11/2002	TIME	
		END TRIP LOCATION	Sulphur LA	DATE	4/11/2002	TIME	
DISPATCHED BY	Barry	TRUCK #	653155	TRAILER #	200984	TYPE	Roll
ORDER CALLED IN BY		ROLL OFF INSTRUCTIONS (✓)					
INSTRUCTIONS		WAIT TO LOAD		D=1 ONLY		SWAP	TURN
							PIU ONLY
							IN/CB-PLAY
CONTACT		CODES:					
PHONE		1. DEPART FACILITY					
LOAD SCHEDULED DATE		2. ARRIVE JOB SITE					
LOAD SCHEDULED TIME		3. LEFT JOB SITE					
SHIPPER NAME	Phil Energy	4. ARRIVE FSD					
ADDRESS		5. DEPART FSD					
CITY/STATE	Louisiana LA	6. ARRIVE FACILITY					
P.O. #		7. BREAKDOWN START					
HAZARD CLASS		8. BREAKDOWN END					
PRINTER SHIPPING NAME		9. OTHER (EXPLAIN)					
		DATE	TIME	CODE	EXPLANATION		
			10:47	1	CUM		
			11:30	2	Phil Energy		
			11:47	3	Phil Energy		
			12:40	4	CUM TIP		
			1:15	3	CUM TIP		
CONTAINER (DROPPED AT JOB SITE)	CONTAINER TYPE	CONTAINER NUMBER	SIZE	DEMURRAGE EXPLANATIONS:			
CONTAINER PICKED UP AT JOB SITE	OIT	5384	30yd				
	OIT	5179	30yd				
LINE# DELIVERED	Y	N	EQUIPMENT WASHED	Y	N		
BOX CONDITION:	GOOD	FAIR	POOR				
REMARKS:	Return Sept 6 - 22 - 5384						
	Phil Energy - 22 - 5179						
RECEIVER NAME:	CUM	SHIPPER SIGNATURE: <i>John Dwyer</i>					
ADDRESS	7170 John Brannon Rd	SHIPPER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTING TIME					
CITY/STATE	Sulphur LA	MANIFEST #: 91405-40					
S.R.#	62119	DAILY DOWN EQUIPMENT / BOX #					
RISE #		DAILY DOWN LOCATION					
DATE	4/11/2002						
RECEIVER'S SIGNATURE:	<i>B. Barry</i>						
	RECEIVER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTING TIME						

WEST

Bill of Lading (Page 1 of 2)

0041405-46
766400

DOCUMENT # 91405 40

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC *INC*

Street: 7170 JOHN BRANNON ROAD

EPA ID: LADU00777201

City/State/Zip: SULPHUR LA 70685

Phone: (337) 583-2109

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3144 PASSYUNK AVE

EPA ID: PAD 049791 000

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (480) 220 1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.406 1241

Tank 65100

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.11 (BENZENE) <i>PROFIL - 060043LA</i>	CM	24.40	T
		IM CONTAINER# EPIJ225F21			
		RAT. CAR# EPIX91405			
		ERG# 171 H099 <i>NA</i>			

RECEIVED subject to the classification and terms to which the date of the issue of this Bill of Lading, the property described above is, upon receipt, except as noted (in brackets and conditions of packages unknown), marks consigned and destined as indicated above which said carrier shall not be liable for loss or damage through his control or operation in possession of the property under the receipt hereon in any form to the extent of delivery as said destination. If goods route, otherwise to deliver to another carrier or to a consignee to said destination, it is mutually agreed as to each carrier or a fee of any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Port: *[Signature]* Date: 3/7/22

Per: *Luca Costas* Date: 3/8/22

Mark with "X" or "RD" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is optional, except for identifying hazardous materials on Bills of Lading 172.201 (a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement described in section 172.204(b) of the Federal Regulations, as provided on the Bill of Lading does apply, unless a specific exception from the rule hereof is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Per: *Beunda Spick* Date: *4/11/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81405-9C

Consignee: CHEMICAL WASTE MANAGEMENT INC.	TO: <i>INC</i>	FROM:
Street: 7170 JOHN BRANNON ROAD	Shipper: PHILADELPHIA ENERGY SOLUTIONS R&W LLC	
EPA ID: LA000077201	Street: 3144 PASSYUNK AVE	
City/State/Zip: SULPHUR LA 70665	EPA ID: PAD 049791 090	
Phone: (337) 683-2109	City/State/Zip: PHILADELPHIA, PA 19145	
	Phone: (480) 298-1524	

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	1A30C0147272 (800) 336-2189
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: <i>4.11.22</i>

1/11/80
10:00 AM
1000
1000
1000

84880
34300

50580

30380

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 74014900

WEIGHED BY _____

DRIVER Demetrius
 CO-DRIVER _____



WASTE MANAGEMENT
 COW TRANSPORTATION - LAKE CHARLES
 1170 JOHN BRANKIN RD.
 SUITE 100, LA 70663
 (800) 335-2189

Chm
 TRANSPORTER
 250070

SERVICE ORDER

PROFILE NUMBER <u>9698436A</u>	START TRIP LOCATION <u>Salphur LA</u>	DATE <u>9/11/22</u>	TIME _____
DISPATCHED BY <u>Barys</u>	TRUCK # <u>653375</u>	TRAILER # _____	TYPE <u>Roll</u>
INSTRUCTIONS: <u>PIU</u>			
CONTACT: _____ PHONE: _____			
LOAD SCHEDULED DATE: _____ LOAD SCHEDULED TIME: _____			
SHIPPER NAME <u>Chm Co Phil Energy</u>			
ADDRESS: _____ CITY / STATE <u>Louis LA</u>			
P.O. # _____			
HAZARD CLASS _____ HMT / NA # _____			
PROPER SHIPPING NAME _____			
CONTAINER DROPPED AT JOB SITE	CONTAINER TYPE <u>Roll</u>	CONTAINER NUMBER <u>5124</u>	SIZE <u>30</u>
CONTAINER PICKED UP AT JOB SITE _____			
UNITS DELIVERED: Y <input type="checkbox"/> N <input type="checkbox"/>	EQUIPMENT WASHOUT: Y <input type="checkbox"/> N <input type="checkbox"/>		
BOX CONDITION: GOOD FAIR POOR			
REMARKS: _____			
RECEIVER NAME: <u>Chm</u>		SHIPPER SIGNATURE: <u>[Signature]</u>	
ADDRESS: <u>717038A</u>		SHIPPER'S SIGNATURE VERIFIED: _____	
CITY / STATE: <u>Salphur LA</u>		MANIFEST # _____	
SR <u>62120</u>	TIME SLOT _____	DOLLY DOWN EQUIPMENT / BOX # _____	
HLN # _____	DATE _____	DOLLY DOWN LOCATION _____	
RECEIVER'S SIGNATURE: <u>[Signature]</u>			

DEMURRAGE EXPLANATIONS:

105390
Bill of Lading (Page 1 of 2)

WATKINS

106397

DOCUMENT# 91405-40

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000727201
 City/State/Zip: SULPHUR LA 70685
 Phone: (337) 583-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 049791 008
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 220-1574

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Ticks total

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Value	UCM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (BENZENE) PROFILE: 889843LA	CM	24.35	Y
		M CONTAINER# EPIU225260			
		RAIL CARN# EPIXB1405			
		ERG# 171 H030			NH

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages untested), marked, counted and described as indicated above which each carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as so designated. If such route, whether to deliver to another carrier on the route to said destination, is mutually agreed to by each carrier of all or any of said property, each of or any parties of said route to destination and as to each party of the route is the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the rates of billing terms and conditions in the governing classification and tariffs and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 3/7/22
 Per: *Luis Castro* Date: 3/8/22

Mark with "X" or "RD" if appropriate to Consignee Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 422.201(a)(1)-(3) of 49 CFR 171.201(a)(1)-(3) of the Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(b) of the Federal Regulations, as indicated on the Bill of Lading check copy, unless a specific exemption from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Belinda Spicer* Date: *4/11/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 31405-40

Consignee: CHEMICAL WASTE MANAGEMENT, <i>INC</i>
INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777261
City/State/Zip: SULPHUR, LA 70065
Phone: (337) 503-2169

TO	FROM
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M I, LLC	
Street: 3144 PASSYUNK AVE	
EPA ID: PAD 049791 006	
City/State/Zip: PHILADELPHIA, PA 19145	
Phone: (480) 220-1524	

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2169	
Acknowledgment of Receipt	
Per: <i>Von R. Paul</i>	Date: <i>4-11-22</i>

11/11/03 10:00 AM

10/21/03
10/21/03
10/21/03

10/21/03	10/21/03	43060 G
10/21/03	10/21/03	35150 T
10/21/03	10/21/03	48480 N

OVERWEIGHT

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # _____ 766317

WEIGHED BY _____

DRIVER Vernon Paul
 CO-DRIVER _____



CWM
 TRANSPORTER
 255268

SERVICE ORDER

PROFILE NUMBER <u>769843LA</u>	START TRIP LOCATION <u>Gulphun LA</u>	DATE <u>4-11-22</u>	TIME _____
DISPATCHED BY <u>BANK</u>	END TRIP LOCATION <u>Gulphun LA</u>	DATE <u>4-11-22</u>	TIME _____
ORDER CALLED IN BY _____	TRUCK # <u>653204</u>	TRAILER # <u>707780</u>	TYPE <u>CT</u>
ROLL OFF INSTRUCTIONS (V)			
INSTRUCTIONS _____	WAIT TO LOAD _____	DEL. ONLY _____	SWAP _____
CONTACT _____	TURN _____	W/O ONLY _____	INTER-PLANT _____
PHONE _____	CODES:		
LOAD SCHEDULED DATE _____	1 DEPART FACILITY		
LOAD SCHEDULED TIME _____	2 ARRIVE JOBSITE		
SHIPPER NAME <u>Philadelphia Energy</u>	3 LEFT JOBSITE		
ADDRESS _____	4 ARRIVE TSD		
CITY/STATE <u>Lacrosse LA</u>	5 DEPART TSD		
P.O. # _____	6 ARRIVED BACK TO		
HAZARD CLASS <u>9</u>	7 BREAKDOWN START		
UN/NAK <u>3077</u>	8 BREAKDOWN END		
PROPER SHIPPING NAME _____	9 OTHER EXPLAN.		
CONTAINER DROPPED AT JOBSITE _____	DATE <u>4-11-22</u>	TIME AM/PM <u>0715</u>	CODE _____
CONTAINER PICKED UP AT JOBSITE _____	DATE _____	TIME AM/PM <u>0735</u>	EXPLANATION <u>Philadelphia</u>
LINE DELIVERED: Y N _____	DATE _____	TIME AM/PM <u>0800</u>	EXPLANATION <u>Philadelphia</u>
BOX CONDITION: GOOD FAIR POOR _____	DATE _____	TIME AM/PM <u>0945</u>	EXPLANATION <u>CWM</u>
REMARKS: <u>EPIX-22-5266</u>	DEMURRAGE EXPLANATIONS:		
RECEIVER NAME: <u>CWM</u>	SHIPPER SIGNATURE: <u>Vernon Paul</u>		
ADDRESS: <u>7170 John Brannon Rd</u>	SHIPPER'S SIGNATURE VALIDATES ARRIVAL AND DEPARTURE TIME		
CITY/STATE: <u>Gulphun LA</u>	MANIFEST #: <u>EPIX-91405</u>		
S.P. #: <u>102121</u>	TIME SLOT _____	DOLLY DOWN EQUIPMENT / BOX # _____	
RUN # _____	DATE: <u>4-11-22</u>	LOCALITY DOWN LOCATION _____	
RECEIVER'S SIGNATURE: <u>BP</u>	RECEIVER'S SIGNATURE VALIDATES ARRIVAL AND DEPARTURE TIME		

Bill of Lading (Page 1 of 2)

DOCUMENT# 91405-1E

W38315

0091405-1E

7666420

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: EA0000777201
 City/State/Zip: SULPHUR LA 70685
 Phone: (337) 583-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNK AVE
 EPA ID: PAD 060731 008
 City/State/Zip: PHILADELPHIA, PA 19146
 Phone: (480) 220-1524

ADDITIONAL INFORMATION

VUE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a) 1241

Tickets 6/22

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	HQ UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (BENZENE) PROFILE: 669843LA	CM	22.15	T
		TRC CONTAINER# EPH1225206 RAIL CAR# EPIX01405			
		FRG# 171 H038			NH

RECEIVED SUBJECT TO THE CLASSIFICATIONS AND MARKS AT OFFICE ON THE DATE OF THE ISSUE OF THIS BILL OF LADING, THE PROPERTY DESCRIBED ABOVE IS APPARENTLY GOOD ORDER, except as noted (contents and condition of packages unknown), marked, certified and described as indicated above which said carrier (the word "order being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery at said destination, at its rate, unless also consigned to another carrier on the route to said destination. It is mutually agreed at the date of shipment of all or any of said property, over all or any portion of said route to destination and as to each party of any line interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification on the date of shipment.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Date: 3/8/22
 Per: *[Signature]* Date: 3/7/22
 Per: *Luis Castro*

Mark with "X" or "H" appropriate in designated Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials and does not constitute a certification of the Federal Regulations. Also, when shipping hazardous materials, the shipper certifies on this bill of lading that the requirements in section 172.201(c) of the Federal Regulations, as indicated on the Bill of Lading, does apply, unless a specific exception from the requirements is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Date: 4/11/22
 Per: *Belinda Spicer*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91405-4F

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT
INC
Street: 2170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70065
Phone: (337) 683-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS RRM
LLC
Street: 3144 PASSYUNGAVE
EPA ID: PA004291086
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1624

Carrier 2: BNSF Railway Company
Acknowledgement of Receipt
Per: _____ Date: _____
Carrier 3: Chemical Waste Management, Inc
LA0000147272 (800) 336-2169
Acknowledgement of Receipt
Per: *[Signature]* Date: 4.11.22

C/11/19/93 00

78700 G
34400 T
44300 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 71001020

WEIGHED BY _____

DRIVER David Long
 CO-DRIVER _____



WASTE MANAGEMENT
 CWM TRANSPORTATION - LAKE CHARITZ
 7173 JOHN BRANNON RD.
 SUITE 100, LA 70569
 (800) 338-2189

Clay
TRANSPORTER
 255061

SERVICE ORDER

PROFILE NUMBER <u>969848LA</u> DISPATCHED BY <u>Long</u> ORDER CALLED IN BY _____ INSTRUCTIONS <u>Scrap</u>		START TRIP LOCATION <u>Sulphur LA</u> END TRIP LOCATION _____ TRUCK # <u>6522 XS</u>		DATE <u>4-11-22</u> TIME _____ DATE _____ TIME _____ TRAILER # _____ TYPE <u>Roll</u>																									
CONTACT PHONE _____ LOAD SCHEDULED DATE _____ LOAD SCHEDULED TIME _____		ROLL OFF INSTRUCTIONS (✓) WAIT TO LOAD _____ DEL. ONLY _____ SWAP <input checked="" type="checkbox"/> TURN _____ P/U ONLY _____ INTER-FUNT _____ CODES: 1. DEPART FACILITY 2. ARRIVE ON SITE 3. LEFT DRIVE 4. ARRIVE 120 5. DEPART 120 6. ARRIVE FACILITY 7. BREAKDOWN START 8. BREAKDOWN END 9. OTHER (EXPLAIN)																											
SHIPPER NAME <u>Phil Energy</u> ADDRESS _____ CITY / STATE <u>Louis LA</u> P.O.# _____ HAZARD CLASS _____ UNIT / N/A# _____ PROPER SHIPPING NAME _____		<table border="1"> <thead> <tr> <th>DATE</th> <th>TIME AM/PM</th> <th>CODE</th> <th>EXPLANATION</th> </tr> </thead> <tbody> <tr> <td></td> <td>1017</td> <td></td> <td><u>Clay</u></td> </tr> <tr> <td></td> <td>1105</td> <td></td> <td><u>Roll</u></td> </tr> <tr> <td></td> <td>1127</td> <td></td> <td><u>Roll</u></td> </tr> <tr> <td></td> <td>1250</td> <td></td> <td><u>Clay</u></td> </tr> <tr> <td></td> <td>1430</td> <td></td> <td><u>Clay</u></td> </tr> </tbody> </table>				DATE	TIME AM/PM	CODE	EXPLANATION		1017		<u>Clay</u>		1105		<u>Roll</u>		1127		<u>Roll</u>		1250		<u>Clay</u>		1430		<u>Clay</u>
DATE	TIME AM/PM	CODE	EXPLANATION																										
	1017		<u>Clay</u>																										
	1105		<u>Roll</u>																										
	1127		<u>Roll</u>																										
	1250		<u>Clay</u>																										
	1430		<u>Clay</u>																										
CONTAINER DROPPED AT JOB SITE _____ CONTAINER PICKED UP AT JOB SITE _____ TOWER DELIVERED. Y N EQUIPMENT WASH-OUT. Y N BOX CONDITION. (GOOD) FAIR POOR		CONTAINER TYPE <u>Roll</u> CONTAINER NUMBER <u>5121</u> SIZE <u>30</u> CONTAINER TYPE <u>Roll</u> CONTAINER NUMBER <u>2206</u> SIZE _____ DEMURRAGE EXPLANATIONS:																											
REMARKS: _____ _____ _____		RECEIVER NAME: <u>Clay</u> ADDRESS <u>7170 SBA</u> CITY/STATE <u>Sulphur LA</u> S.I.L. # <u>02102</u> TIME SLOT _____ RUN Y _____ DATE _____ RECEIVER'S SIGNATURE: <u>B. J. [Signature]</u>																											
		SHIPPER SIGNATURE: <u>David Long</u> MANIFEST #: _____ DAILY DOWN EQUIPMENT / BOX # _____ DAILY DOWN LOCATION _____ DRIVER'S SIGNATURE VERIFIED ARRIVAL AND DEPARTURE TIME																											

Bill of Lading (Page 1 of 2)

441405-4F
7166417

DOCUMENT# 91405-4F

TO
 Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7176 JOHN BRANNON ROAD
 EPA ID: LA0000777901
 City/State/Zip: SUITPHUR, LA 70685
 Phone: (337) 583-2169

FROM
 Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNICAVE
 EPA ID: PA0 049791 088
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 220-1524

ADDITIONAL INFORMATION
 VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.11(a)1241
 Telus 62123

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RO, UNSORT, ENVIRONMENTALLY HAZARDOUS SUBSTANCE. SOLID. N.O.S. B. III (BENZENE) PROFILE: 309243LA IM CONTAINER# EPIU225232 RAIL CAR# EPIX91405	CM	24.08	T
		TRG# 171 H039 NH			

RECEIVED subject to the classification and tariffs in effect on the date of the issue of this Bill of Lading. The property described above is prepared in good order, except as noted (contents and condition of packages unknown), marked, consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as said destination. It will route, if possible, to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time involved in all or any said property, that every service to be performed hereunder shall be subject to the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

SHIPPER: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Date: 3/8/22
 Title: 3/7/22
 Per: Luis Castro

Mark with "X" or "1" if applicable to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) of Title 49, Code of Federal Regulations. When shipping hazardous materials, the shipper's certification statement prescribed in section 172.201(b) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from this requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: Belinda Spivey
 Date: 4/11/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91405 4F

TO: PHILADELPHIA ENERGY SOLUTIONS R&M

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70066
Phone: (337) 583-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3114 PASSYUNK AVE
EPA ID: PAD 049731 090
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	Date:
For:	
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2169
Acknowledgment of Receipt	Date:
For: Vernon Paul	4-11-22

7/10/65

1000
1000
1000

OVERWEIGHT

82800 G
35460 T
47320 N

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 71010607

WEIGHED BY _____

DRIVER Vernon Pau
 CO-DRIVER _____



WASTE MANAGEMENT
 CWM TRANSPORTATION - LAKE CHARLES
 7170 JOHN BRANNON RD
 SULPHUR, LA 70663
 (504) 338-2169

CWM
TRANSPORTER
 251377

SERVICE ORDER

PROFILE NUMBER <u>969843 La</u>	START TRIP LOCATION <u>Sulphur LA</u>	DATE <u>4-11-22</u>	TIME _____
	END TRIP LOCATION <u>Sulphur La</u>	DATE <u>4-11-22</u>	TIME _____
DISPATCHED BY _____	TRUCK # <u>653 204</u>	TRAILER # <u>701780</u>	TYPE <u>CT</u>
ORDER CALLED IN BY _____	ROLL OFF INSTRUCTIONS (✓) WAIT TO LOAD _____ DEL. ONLY _____ SWAP _____ TURN _____ PAL ONLY _____ INTERFERENCE _____ CODES: 1. DEPART FACILITY 2. ARRIVE JOBSITE 3. LEFT JOBSITE 4. ARRIVED 5. DEPARTED 6. ARRIVED FACILITY 7. BREAKDOWN START 8. BREAKDOWN END 9. OTHER EXPLAN.		
INSTRUCTIONS <u>E/R</u>			
CONTACT _____	DATE <u>4-11-22</u>	TIME <u>9:36</u>	CODE <u>5</u>
PHONE _____		TIME <u>10:24</u>	CODE <u>2</u>
LOAD SCHEDULED DATE _____		TIME <u>11:10</u>	EXPLANATION <u>Philadelphie Energy</u>
LOAD SCHEDULED TIME _____		TIME <u>12:45</u>	EXPLANATION <u>CWM</u>
SHIPPER NAME <u>Philadelphie Energy</u>		TIME <u>14:00</u>	
ADDRESS _____			
CITY/STATE <u>LACASSINE LA</u>			
P.O. # _____			
HAZARD CLASS <u>9</u>	UN/NA# <u>3077</u>		
PROPER SHIPPING NAME _____			
CONTAINER UNDRPO AT JOB SITE	CONTAINER TYPE <u>CT</u>	CONTAINER NUMBER <u>5266</u>	SIZE <u>30y</u>
CONTAINER PICKUP AT JOB SITE	CONTAINER TYPE <u>CT</u>	CONTAINER NUMBER <u>5232</u>	SIZE <u>30y</u>
LINE DELIVERED: Y N	EQUIPMENT WASHOUR: Y N		
BOX CONDITION: GOOD FAIR POOR			
REMARKS <u>EPIU-22-5232</u>			

RECEIVER NAME: Cwm
 ADDRESS: 7170 John Brannon Rd
 CITY/STATE: Sulphur LA
 ZIP: 70663
 RUN # 2
 TIME SLOT _____
 DATE: 4-11-22
 RECEIVER'S SIGNATURE: B Spive

SHIPPER SIGNATURE: [Signature]
 MANIFEST #: EPIX 91905
 DOLLY DOWN EQUIPMENT / BOX # _____
 DOLLY DOWN LOCATION _____
 SHIPPER'S SIGNATURE VERIFIES ARRIVAL AND DEPARTURE TIME

W53575

W53575-444

766357

Bill of Lading (Page 1 of 2)

DOCUMENT# 84127-4A

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 1170 JOHN BRANNON ROAD
 EPA ID: LA0000771201
 City/State/Zip: SULPHUR LA 70985
 Phone: (337) 683-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PAD 049791 093
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 228-1624

ADDITIONAL INFORMATION

VRI: TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 49CFR 201.1AA 1241

Ticks 6212

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	WGK
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., B. (BENZENE) PROFILE: 069643LA RM CONTAINER# EPIU225170 RAIL CARD EPD01027 ERG# 171 H039	CM	16.70	T

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked, counted and destined as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery as and destination. It is further agreed, otherwise to deliver to another carrier at the route to said destination. It is further agreed as to each article of all cargo of said property, over all or any portion of said route to destination and as to each party at any time involved in it or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 For: *[Signature]* Date: 3/7/22
 Per: *Luis Costia* Date: 3/8/22

Note with "X" or "RD" in appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on B/Ls of Lading 172.261 (e)(1) (ii) of 49 CFR 40. Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement provided in section 172.204(b) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certification of receipt of materials
 Per: *Berinda Spucer* Date: *4/7/22*


Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91027-4A

TO - FROM

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LACX00777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 503-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PAD 048781 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 225-1624

Carrier 2: BNSF Railway Company	
Acknowledgment of Receipt	Date:
For:	
Carrier 3: Chemical Waste Management, Inc.	LACX00147272 (800) 336-2189
Acknowledgment of Receipt	Date: 4-7-22
For: 	

EMM 2010

TICKET #

DATE: 7/16/00 TIME: 09:00
LOCATION: 06/01/0002

DATE	TIME	WEIGHT
7/16/00	09:00	71680 G
7/16/00	10:00	34580 T
7/16/00	11:00	37100 N

CHEMICAL WASTE MANAGEMENT, INC.
 7170 JOHN BRANNON ROAD
 SULPHUR, LA 70665

RECEIVING TICKET # 7166357

WEIGHED BY _____

Waste

0091027-48

766369

Bill of Lading (Page 1 of 2)

DOCUMENT # 01027-48

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC.
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LAJ000777201
 City/State/Zip: SULPHUR LA 70686
 Phone: (337) 560-2189

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASBYUNKAVE
 EPA ID: PA00040791090
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (410) 228-1521

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.4(a)12(1)

Totals 62113

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	RD UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE. SOLID. N.O.S. S.III (BENZENE) PROFILE 980043LA IRG CONTAINER# EPIU226953 RAIL CAR# EPIX91027 ERG# 171 H330 NH	GM	20.13	T

RECEIVED subject to the classifications and labels in effect on the date of the issue of this Bill of Lading, the properly described above in respect to grade, except as noted (contents and condition of packages unknown), marked, compressed and dunnage as indicated above which shall remain the responsibility of the shipper. The shipper warrants that the goods are properly packed, secured, and labeled in accordance with the applicable regulations. The shipper warrants that the goods are properly packed, secured, and labeled in accordance with the applicable regulations. The shipper warrants that the goods are properly packed, secured, and labeled in accordance with the applicable regulations.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 3/1/22
 Per: Luis Castro Date: 3/8/22

Mach with "X" or "RD" in parentheses to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of the column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) of Title 49 Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as applicable on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc. Certification of receipt of materials
 Per: *Carric Amador* Date: 4-5-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 91027-4B

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70966
Phone: (337) 683-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS RBM LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA000001093
City/State/Zip: PHILADELPHIA, PA 19146
Phone: (410) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc	LA0000147272 (B00) 336-2169
Acknowledgement of Receipt	
Per: <i>CMW</i>	Date: <i>4-8</i>

EP1422333

FEB 20

IP 657504
GROSS WEIGHT 15143.1140
NET WEIGHT 10208.7200

ATTACHED TIGHTS 20

14005 10500 (5) GROSS 70680 G
14005 10200 (5) 30280 T
151 10000 (5) 40400 N

151 10000 (5)

151 10000 (5)

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70866

RECEIVING TICKET #

4 705369

WEIGHED BY

1052488

0091097-4C 766324

Bill of Lading (Page 1 of 2)

DOCUMENT ID 91027-4C

TO

Consignee: CHEMICAL WASTE MANAGEMENT, Inc

Street: 7470 JOHN BRANNON ROAD

EPA ID: 1AD000777201

City/State/Zip: SLIPHUR, LA 70665

Phone: (337) 503-2169

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Street: 3144 PASSYUNKAVE

EPA ID: PA01049791090

City/State/Zip: PHILADELPHIA, PA 19145

Phone: (410) 220-1624

ADDITIONAL INFORMATION

VRIE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 251.401 1241

Tidub 6214

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RG, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 6.11 (BENZENE) PROFILE: 966643LA M CONTAINER# EPI0226312 RAIL CARN EPIX91027 IRCA# 171 1939 NH	CM	21.83	T

RECEIVED subject to the classifications and terms in effect on the date of the issue of this Bill of Lading, the property described above is apparent good order, except as noted (markings and condition of packages included), marked, counted and described as indicated above which said carrier (the named carrier being understood through this receipt to include any person or corporation in possession of the property under the carrier's agreement to carry to its usual place of delivery as said destination. If on its route, it wishes to deliver to another carrier on the route to said destination, it is mutually agreed as to each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every contract to be performed hereunder shall be subject to all the Bill of Lading terms and regulations in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC

Carrier: CSX Railroad Corp

Per: *[Signature]* Date: 3/7/22

Per: *Luis Castro* Date: 3/8/22

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading (32.201(a)(1) (U) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc

Certification of receipt of materials

Per: *Belinda Spicer* Date: 4/7/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81027-40

TO: FROM:

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANBON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70685
Phone: (337) 583-2189

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 C49701 090
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220 1624

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2160
Acknowledgement of Receipt	
Per: Vernon W Paul	Date: 4-7-22

5 114 222 22

1,000 LBS

66100 73140
66100 30280
66100 42860

66100	73140	RECEIVED	73140 G
66100	30280		30280 T
66100	42860		42860 N
66100	13140		
66100	66100		

CHEMICAL WASTE MANAGEMENT, INC
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 766326

WEIGHED BY _____

00110511-4R

760355

W3504

Bill of Lading (Page 1 of 2)

DOCUMENT# 91027-AD

TO	
Consignee: CHEMICAL WASTE MANAGEMENT, Inc	
Street: 7170 JOHN BRANNON ROAD	
EPA ID: LA0000777201	
City/State/Zip: SULPHUR LA 70065	
Phone: (337) 583-2160	

FROM	
Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC	
Street: 9144 PASSYUNKAVE	
EPA ID: PAD 049781 096	
City/State/Zip: PHILADELPHIA, PA 19146	
Phone: (480) 228-4124	

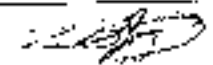
ADDITIONAL INFORMATION
VRC TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.47(a) 1241
Ticks 62MS

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UCM
X	1	RG, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9.III (BENZENE)	CM	20.25	T
		PROFILE: 089843LA			
		IN CONTAINER# EPIU275186			
		RAIL CARN EPIX91027			
		ERGJ 171 H030 NH			

RECEIVED subject to the classifications and titles in effect on the date of the issue of this Bill of Lading, the property described herein is apparent good order, except as noted (contents and condition of packages untraced), marked consigned and delivered as indicated above which said carrier (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under this contract) agrees to carry to its usual place of delivery as said destination. If on its route, it services facilities to another center on the route to said destination, it is mutually agreed as to each center of call or any of said property, over all or any portion of said route to destination and as to each party of any party interested in all or any said property, that every service to be performed thereon shall be subject to all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC Carrier: CSX Railroad Corp

Per:  Date: 3/7/22 Per: Luis Castro Date: 3/8/22

Mark with "X" or "RG" if appropriate to designate Hazardous Materials Substances as defined by the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an optional method for identifying hazardous materials on Bills of Lading 172.201(a)(1) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(e) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc Certification of receipt of materials
Per: Belinda Spicer Date: 4/17/22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 31027-40

TO: FROM

Consignor: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA000077201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 583-2159

Inc

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASSYUNK AVE
EPA ID: PA0 049791 090
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 228-1424

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA000077272 (800) 336-2159
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: <i>4-7</i>

E 414 J 0511 10
TICKET 48

IP 657900
DATE: 02/28/00 10:50:00
COUNTRY: 64 3772077

ALLEGED TICKET 48

100	2270	10	9900110	72780 G
101	7000	11		30520 F
102	2000	10		42260 N
103				
104				

CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 1106255

WEIGHED BY _____

UN11027-11C

153315

200368

Bill of Lading (Page 1 of 2)

DOCUMENT# 91027-411

TO

Consignee: CHEMICAL WASTE MANAGEMENT
 INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: 1AD00077201
 City/State/Zip: SULPHUR LA 70663
 Phone: (337) 583-2165

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M
 LLC
 Street: 8144 PASSYUNK AVE
 CPA ID: PAD 040791 090
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (480) 220-1524

ADDITIONAL INFORMATION

VRE TANK BOT TONS EXCLUDED FROM THE
 DEFINITION OF SOLID WASTE UNDER 40CFR
 261.4(a) 1241

Tanks 1241

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPER UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXEMPTIONS	Type	Volume	LOM
X	1	RQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOL ID, N.O.S. 9 III (BENZENE) PROFILE #85a43LA IM CONTAINER# FPIU225340 RAIL CAR# EPIX91027 ERG# 174 H03B NH	CM	20.50	T

RECEIVED subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above is offered in good order, except as noted (contents and condition of packages unknown), intended consigned and destined as indicated above with said carrier (the said carrier being understood through this contract, or meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery or said destination. If such case, otherwise to deliver to another carrier on the way to said destination, this mutually agreed to in each carrier of all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification as the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 Per: *[Signature]* Date: 3/7/22
 Per: *Luis Castro* Date: 3/8/22

Mark with "X" or "RD" if appropriate in designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of the column is an option limited for identifying hazardous materials on Bills of Lading 172.201(a)(4) (B) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's rail carrier classified prescribed in section 172.204(a) of the Federal Regulations, as indicated on the Bill of Lading does apply, unless a specific exemption from the requirement is provided in the Regulation for a particular material.

Designated Consignee: Chemical Waste Management, Inc
 Certificate of receipt of materials
 Per: *Carmine Dubodaux* Date: 4-8-22

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 81027 4R

TO: _____ FROM: _____

Consignee: CHEMICAL WASTE MANAGEMENT INC
Street: 7170 JOHN BRANNON ROAD
EPA ID: LA0000777201
City/State/Zip: SULPHUR LA 70665
Phone: (337) 593-2169

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M L L C
Street: 3134 MASSYUNKAVE
EPA ID: PAD 048/91 090
City/State/Zip: PHILADELPHIA, PA 19143
Phone: (410) 228-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per: _____	Date: _____
Carrier 3: Chemical Waste Management, Inc. LA0000147272 (800) 336-2160	
Acknowledgement of Receipt	
Per: <i>[Signature]</i>	Date: 7-8-22

EPH022710

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CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70665

RECEIVING TICKET # 766368

WEIGHED BY _____

11/23/88

EXHIBIT 47

7660354

Bill of Lading (Page 1 of 2)

DOCUMENT# 91027-4F

TO

Consignee: CHEMICAL WASTE MANAGEMENT INC
 Street: 7170 JOHN BRANNON ROAD
 EPA ID: LA0000777201
 City/State/Zip: SKILPHURIA 70005
 Phone: (337) 683-2160

FROM

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Street: 3144 PASSYUNKAVE
 EPA ID: PAU 048791 080
 City/State/Zip: PHILADELPHIA, PA 19145
 Phone: (440) 226-1524

ADDITIONAL INFORMATION

VRE TANK BOTTOMS EXCLUDED FROM THE DEFINITION OF SOLID WASTE UNDER 40CFR 261.46(a) 1241

Todd Green

SHIPPER'S INSTRUCTIONS

HAZARDOUS MATERIAL	NO. SHIPPING UNITS	DESCRIPTION OF ARTICLES SPECIAL MARKS & EXCEPTIONS	Type	Volume	UOM
X	1	HQ, UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. 9. III (BENZENE) PROFILE: 969B43LA NA CONTAINERS: EPIU225153 RAIL CARD: EPIX91027 ERG# 171 H029 NH	GM	20.68	T

RECEIVED subject in the classifications and limits in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of packages unknown), marked consigned and certified as indicated above and as indicated on the bill of lading (the word carrier being understood through this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to the usual place of delivery as said destination. If on the route, otherwise to deliver to another carrier on the route to said destination, it is hereby agreed as to each carrier at all or any of said property, over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions.

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
 Carrier: CSX Railroad Corp
 For: *[Signature]* Date: 3/7/22
 For: *Luis Castro* Date: 3/8/22

Mark with "X" or "RC" if appropriate to designate Hazardous Materials Substances as defined in the Department of Transportation Regulations governing the transportation of hazardous materials. The use of this column is an option limited to identifying hazardous materials on Bills of Lading 172.203(a)(1) (b) of Title 49, Code of Federal Regulations. Also, when shipping hazardous materials, the shipper's certification statement prescribed in section 172.204(f) of the Federal Regulations, as indicated on the Bill of Lading each party, unless a specific exception from the requirement is provided in the Regulations for a particular material.

Designated Consignee: Chemical Waste Management, Inc. Certification of receipt of materials
 For: *Belinda Smeier* Date: *4/17/22*

Bill of Lading (Continuation Sheet) 2 of 2

DOCUMENT# 910274F

TO FROM

Consignee: CHEMICAL WASTE MANAGEMENT <i>Inc</i> INC
Street: 2170 JOHN DANNON ROAD
EPA ID: LAD003777201
City/State/Zip: GUL PHIL LA 70556
Phone: (337) 683-2168

Shipper: PHILADELPHIA ENERGY SOLUTIONS R&M LLC
Street: 3144 PASKY LN KAVE
EPA ID: PAD 049751 098
City/State/Zip: PHILADELPHIA, PA 19145
Phone: (480) 220-1524

Carrier 2: BNSF Railway Company	
Acknowledgement of Receipt	
Per:	Date:
Carrier 3: Chemical Waste Management, Inc.	LA0000147272 (800) 336-2189
Acknowledgement of Receipt	
Per: <i>Vernon Paul</i>	Date: <i>4-7-77</i>

E-814200-110

RECEIPT #

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CHEMICAL WASTE MANAGEMENT, INC.
7170 JOHN BRANNON ROAD
SULPHUR, LA 70685

RECEIVING TICKET # 14603526
WEIGHED BY _____



ANALYTICAL REPORT

Lab Number:	L2140781
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	08/10/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2140781

Report Date: 08/10/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2140781-01	PB190-01-SS01	SOIL	PHILADELPHIA, PA	07/29/21 08:35	07/29/21
L2140781-02	PB190-02-SS01	SOIL	PHILADELPHIA, PA	07/29/21 08:45	07/29/21
L2140781-03	PB190-03-SS01	SOIL	PHILADELPHIA, PA	07/29/21 08:55	07/29/21
L2140781-04	PB190-04-SS01	SOIL	PHILADELPHIA, PA	07/29/21 09:05	07/29/21
L2140781-05	PB190-09-SS01	SOIL	PHILADELPHIA, PA	07/29/21 09:25	07/29/21
L2140781-06	PB190-05-SS01	SOIL	PHILADELPHIA, PA	07/29/21 09:40	07/29/21
L2140781-07	PB190-06-SS01	SOIL	PHILADELPHIA, PA	07/29/21 09:55	07/29/21
L2140781-08	PB190-07-SS01	SOIL	PHILADELPHIA, PA	07/29/21 10:05	07/29/21
L2140781-09	PB190-08-SS01	SOIL	PHILADELPHIA, PA	07/29/21 10:35	07/29/21
L2140781-10	PB190-12-SS01	SOIL	PHILADELPHIA, PA	07/29/21 11:00	07/29/21
L2140781-11	PB190-17-SS01	SOIL	PHILADELPHIA, PA	07/29/21 11:20	07/29/21
L2140781-12	PB190-21-SS01	SOIL	PHILADELPHIA, PA	07/29/21 11:30	07/29/21
L2140781-13	PB190-20-SS01	SOIL	PHILADELPHIA, PA	07/29/21 11:45	07/29/21
L2140781-14	PB190-19-SS01	SOIL	PHILADELPHIA, PA	07/29/21 11:55	07/29/21
L2140781-15	PB190-18-SS01	SOIL	PHILADELPHIA, PA	07/29/21 12:15	07/29/21
L2140781-16	PB190-13-SS01	SOIL	PHILADELPHIA, PA	07/29/21 12:30	07/29/21
L2140781-17	PB882-01-SS01	SOIL	PHILADELPHIA, PA	07/29/21 13:20	07/29/21
L2140781-18	PB882-02-SS01	SOIL	PHILADELPHIA, PA	07/29/21 13:40	07/29/21
L2140781-19	DUP-16	SOIL	PHILADELPHIA, PA	07/29/21 00:00	07/29/21
L2140781-20	FB-210729-1	WATER	PHILADELPHIA, PA	07/29/21 12:00	07/29/21
L2140781-21	FB-210729-2	WATER	PHILADELPHIA, PA	07/29/21 14:00	07/29/21
L2140781-22	TB-210729	WATER	PHILADELPHIA, PA	07/29/21 00:00	07/29/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

The analysis of Lead was subcontracted. A copy of the laboratory report is included as an addendum. Please note: This data is only available in PDF format and is not available on Data Merger.

Volatile Organics

L2140781-01D, -06D, -07D, and -09D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2140781-01D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (154%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2140781-03 and -04: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2140781-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (197%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2140781-04: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (211%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2140781-06D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (217%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2140781-07D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (148%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Case Narrative (continued)

L2140781-09D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (144%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Microextractables


The WG1530873-2 LCS recovery for 1,2-dibromoethane (129%), associated with L2140781-20 through -22, is outside Alpha's acceptance criteria, but within the acceptance criteria specified in the method.

Semivolatile Organics by SIM

L2140781-09D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 08/10/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-01 D
 Client ID: PB190-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 08:35
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 10:48
 Analyst: KJD
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.50	0.050	4
Benzene	ND		mg/kg	0.12	0.041	4
1,2-Dichloroethane	ND		mg/kg	0.25	0.064	4
Toluene	ND		mg/kg	0.25	0.14	4
1,2-Dibromoethane	ND		mg/kg	0.12	0.073	4
Ethylbenzene	ND		mg/kg	0.25	0.035	4
p/m-Xylene	ND		mg/kg	0.50	0.14	4
o-Xylene	ND		mg/kg	0.25	0.072	4
Xylenes, Total	ND		mg/kg	0.25	0.072	4
Isopropylbenzene	2.4		mg/kg	0.25	0.027	4
1,3,5-Trimethylbenzene	ND		mg/kg	0.50	0.048	4
1,2,4-Trimethylbenzene	ND		mg/kg	0.50	0.083	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	154	Q	70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-02
 Client ID: PB190-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 08:45
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 14:14
 Analyst: KJD
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00029	1
Xylenes, Total	ND		mg/kg	0.00098	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-03
 Client ID: PB190-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 08:55
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 12:58
 Analyst: KJD
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.19	0.019	1
Benzene	0.10		mg/kg	0.048	0.016	1
1,2-Dichloroethane	ND		mg/kg	0.096	0.025	1
Toluene	0.52		mg/kg	0.096	0.052	1
1,2-Dibromoethane	ND		mg/kg	0.048	0.028	1
Ethylbenzene	0.11		mg/kg	0.096	0.014	1
p/m-Xylene	0.40		mg/kg	0.19	0.054	1
o-Xylene	0.13		mg/kg	0.096	0.028	1
Xylenes, Total	0.53		mg/kg	0.096	0.028	1
Isopropylbenzene	0.061	J	mg/kg	0.096	0.010	1
1,3,5-Trimethylbenzene	0.062	J	mg/kg	0.19	0.018	1
1,2,4-Trimethylbenzene	0.20		mg/kg	0.19	0.032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	197	Q	70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-04
 Client ID: PB190-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 09:05
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 13:24
 Analyst: KJD
 Percent Solids: 76%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.15	0.015	1
Benzene	0.13		mg/kg	0.038	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.075	0.019	1
Toluene	0.17		mg/kg	0.075	0.041	1
1,2-Dibromoethane	ND		mg/kg	0.038	0.022	1
Ethylbenzene	0.12		mg/kg	0.075	0.010	1
p/m-Xylene	0.28		mg/kg	0.15	0.042	1
o-Xylene	0.056	J	mg/kg	0.075	0.022	1
Xylenes, Total	0.34	J	mg/kg	0.075	0.022	1
Isopropylbenzene	0.65		mg/kg	0.075	0.0082	1
1,3,5-Trimethylbenzene	0.039	J	mg/kg	0.15	0.014	1
1,2,4-Trimethylbenzene	0.23		mg/kg	0.15	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	123		70-130
4-Bromofluorobenzene	211	Q	70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-05
 Client ID: PB190-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 09:25
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 14:40
 Analyst: KJD
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.00036	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-06 D
 Client ID: PB190-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 09:40
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 11:14
 Analyst: KJD
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.55	0.055	4
Benzene	ND		mg/kg	0.14	0.045	4
1,2-Dichloroethane	ND		mg/kg	0.27	0.070	4
Toluene	ND		mg/kg	0.27	0.15	4
1,2-Dibromoethane	ND		mg/kg	0.14	0.080	4
Ethylbenzene	ND		mg/kg	0.27	0.038	4
p/m-Xylene	ND		mg/kg	0.55	0.15	4
o-Xylene	ND		mg/kg	0.27	0.080	4
Xylenes, Total	ND		mg/kg	0.27	0.080	4
Isopropylbenzene	12.		mg/kg	0.27	0.030	4
1,3,5-Trimethylbenzene	ND		mg/kg	0.55	0.053	4
1,2,4-Trimethylbenzene	ND		mg/kg	0.55	0.091	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	123		70-130
4-Bromofluorobenzene	217	Q	70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-07 D
 Client ID: PB190-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 09:55
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 11:40
 Analyst: KJD
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	1.5	0.15	10
Benzene	0.92		mg/kg	0.37	0.12	10
1,2-Dichloroethane	ND		mg/kg	0.74	0.19	10
Toluene	ND		mg/kg	0.74	0.40	10
1,2-Dibromoethane	ND		mg/kg	0.37	0.22	10
Ethylbenzene	0.11	J	mg/kg	0.74	0.10	10
p/m-Xylene	ND		mg/kg	1.5	0.42	10
o-Xylene	ND		mg/kg	0.74	0.22	10
Xylenes, Total	ND		mg/kg	0.74	0.22	10
Isopropylbenzene	11.		mg/kg	0.74	0.081	10
1,3,5-Trimethylbenzene	ND		mg/kg	1.5	0.14	10
1,2,4-Trimethylbenzene	66.		mg/kg	1.5	0.25	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	148	Q	70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-08
 Client ID: PB190-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 10:05
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 22:10
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-09 D
 Client ID: PB190-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 10:35
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 12:06
 Analyst: KJD
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	1.2	0.12	10
Benzene	ND		mg/kg	0.29	0.096	10
1,2-Dichloroethane	ND		mg/kg	0.58	0.15	10
Toluene	ND		mg/kg	0.58	0.31	10
1,2-Dibromoethane	ND		mg/kg	0.29	0.17	10
Ethylbenzene	ND		mg/kg	0.58	0.082	10
p/m-Xylene	ND		mg/kg	1.2	0.32	10
o-Xylene	ND		mg/kg	0.58	0.17	10
Xylenes, Total	ND		mg/kg	0.58	0.17	10
Isopropylbenzene	6.7		mg/kg	0.58	0.063	10
1,3,5-Trimethylbenzene	ND		mg/kg	1.2	0.11	10
1,2,4-Trimethylbenzene	0.40	J	mg/kg	1.2	0.19	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	144	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-10
 Client ID: PB190-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 15:04
 Analyst: KJD
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-11
 Client ID: PB190-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:20
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 15:29
 Analyst: KJD
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.00028	0.00002	1
Benzene	ND		mg/kg	0.00006	0.00002	1
1,2-Dichloroethane	ND		mg/kg	0.00014	0.00003	1
Toluene	ND		mg/kg	0.00014	0.00007	1
1,2-Dibromoethane	ND		mg/kg	0.00006	0.00004	1
Ethylbenzene	ND		mg/kg	0.00014	0.00001	1
p/m-Xylene	ND		mg/kg	0.00028	0.00007	1
o-Xylene	ND		mg/kg	0.00014	0.00004	1
Xylenes, Total	ND		mg/kg	0.00014	0.00004	1
Isopropylbenzene	ND		mg/kg	0.00014	0.00001	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.00028	0.00002	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.00028	0.00004	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-12
 Client ID: PB190-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:30
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 15:54
 Analyst: KJD
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-13
 Client ID: PB190-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:45
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 16:19
 Analyst: KJD
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-14
 Client ID: PB190-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:55
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 16:43
 Analyst: KJD
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-15
 Client ID: PB190-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 12:15
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 17:08
 Analyst: KJD
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-16
 Client ID: PB190-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 12:30
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 17:33
 Analyst: KJD
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	127		70-130
Dibromofluoromethane	98		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-17
 Client ID: PB882-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 13:20
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 17:58
 Analyst: KJD
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	120		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-18
 Client ID: PB882-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 13:40
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 18:23
 Analyst: KJD
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-19
 Client ID: DUP-16
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 00:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/04/21 18:47
 Analyst: KJD
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00025	1
Xylenes, Total	ND		mg/kg	0.00088	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-20
 Client ID: FB-210729-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 12:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 08/03/21 13:35
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 08/03/21 10:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-20
 Client ID: FB-210729-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 12:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 08/02/21 01:36
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-21
 Client ID: FB-210729-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 14:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 08/03/21 13:42
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 08/03/21 10:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-21
 Client ID: FB-210729-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 14:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 08/02/21 02:02
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-22
 Client ID: TB-210729
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 00:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 08/03/21 13:48
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 08/03/21 10:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-22
 Client ID: TB-210729
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 00:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 08/02/21 02:28
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/01/21 18:58
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 20-22 Batch: WG1530605-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 08/03/21 12:09
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 08/03/21 10:51

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 20-22 Batch: WG1530873-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 08/04/21 10:23
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,03-04,06-07,09 Batch: WG1531648-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/04/21 10:23
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,05,10-19 Batch: WG1531649-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/04/21 21:20
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 08 Batch: WG1531904-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	96		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2140781

Report Date: 08/10/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 20-22 Batch: WG1530605-3 WG1530605-4								
Methyl tert butyl ether	86		87		63-130	1		20
Benzene	100		110		70-130	10		20
1,2-Dichloroethane	95		94		70-130	1		20
Toluene	100		110		70-130	10		20
Ethylbenzene	100		110		70-130	10		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	100		105		70-130	5		20
Isopropylbenzene	100		110		70-130	10		20
1,3,5-Trimethylbenzene	92		99		64-130	7		20
1,2,4-Trimethylbenzene	93		98		70-130	5		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	89		90		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	95		98		70-130
Dibromofluoromethane	104		103		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2140781

Report Date: 08/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 20-22 Batch: WG1530873-2									
1,2-Dibromoethane	129	Q	-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2140781

Project Number: 200.00135.005.03

Report Date: 08/10/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,03-04,06-07,09 Batch: WG1531648-3 WG1531648-4								
Methyl tert butyl ether	95		98		66-130	3		30
Benzene	86		85		70-130	1		30
1,2-Dichloroethane	93		93		70-130	0		30
Toluene	91		90		70-130	1		30
1,2-Dibromoethane	91		93		70-130	2		30
Ethylbenzene	98		96		70-130	2		30
p/m-Xylene	89		89		70-130	0		30
o-Xylene	90		90		70-130	0		30
Isopropylbenzene	103		101		70-130	2		30
1,3,5-Trimethylbenzene	105		103		70-130	2		30
1,2,4-Trimethylbenzene	106		106		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		107		70-130
Toluene-d8	108		108		70-130
4-Bromofluorobenzene	111		115		70-130
Dibromofluoromethane	98		97		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,05,10-19 Batch: WG1531649-3 WG1531649-4								
Methyl tert butyl ether	95		98		66-130	3		30
Benzene	86		85		70-130	1		30
1,2-Dichloroethane	93		93		70-130	0		30
Toluene	91		90		70-130	1		30
1,2-Dibromoethane	91		93		70-130	2		30
Ethylbenzene	98		96		70-130	2		30
p/m-Xylene	89		89		70-130	0		30
o-Xylene	90		90		70-130	0		30
Isopropylbenzene	103		101		70-130	2		30
1,3,5-Trimethylbenzene	105		103		70-130	2		30
1,2,4-Trimethylbenzene	106		106		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	105		107		70-130
Toluene-d8	108		108		70-130
4-Bromofluorobenzene	111		115		70-130
Dibromofluoromethane	98		97		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2140781

Project Number: 200.00135.005.03

Report Date: 08/10/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08 Batch: WG1531904-3 WG1531904-4								
Methyl tert butyl ether	93		93		66-130	0		30
Benzene	86		83		70-130	4		30
1,2-Dichloroethane	88		87		70-130	1		30
Toluene	92		90		70-130	2		30
1,2-Dibromoethane	87		88		70-130	1		30
Ethylbenzene	99		96		70-130	3		30
p/m-Xylene	92		89		70-130	3		30
o-Xylene	92		90		70-130	2		30
Isopropylbenzene	108		105		70-130	3		30
1,3,5-Trimethylbenzene	108		105		70-130	3		30
1,2,4-Trimethylbenzene	109		107		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	101		100		70-130
Toluene-d8	109		109		70-130
4-Bromofluorobenzene	118		117		70-130
Dibromofluoromethane	95		95		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-01
 Client ID: PB190-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 08:35
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/04/21 00:17
 Analyst: DV
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.25		mg/kg	0.0081	0.0015	1
Fluorene	0.27		mg/kg	0.0081	0.00098	1
Phenanthrene	0.35		mg/kg	0.0081	0.00069	1
Anthracene	0.057		mg/kg	0.0081	0.00065	1
Pyrene	0.032		mg/kg	0.0081	0.00057	1
Benzo(a)anthracene	0.0069	J	mg/kg	0.0081	0.00077	1
Chrysene	0.0043	J	mg/kg	0.0081	0.00061	1
Benzo(b)fluoranthene	0.0052	J	mg/kg	0.0081	0.00077	1
Benzo(a)pyrene	0.0042	J	mg/kg	0.0081	0.00098	1
Benzo(ghi)perylene	0.0040	J	mg/kg	0.0081	0.00069	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	170	Q	23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	66		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-02
 Client ID: PB190-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 08:45
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 20:45
 Analyst: DV
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0082	0.0015	1
Fluorene	ND		mg/kg	0.0082	0.00098	1
Phenanthrene	ND		mg/kg	0.0082	0.00070	1
Anthracene	ND		mg/kg	0.0082	0.00065	1
Pyrene	0.00078	J	mg/kg	0.0082	0.00057	1
Benzo(a)anthracene	0.0013	J	mg/kg	0.0082	0.00078	1
Chrysene	0.00065	J	mg/kg	0.0082	0.00061	1
Benzo(b)fluoranthene	0.00090	J	mg/kg	0.0082	0.00078	1
Benzo(a)pyrene	ND		mg/kg	0.0082	0.00098	1
Benzo(ghi)perylene	ND		mg/kg	0.0082	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	61		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-03
 Client ID: PB190-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 08:55
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 12:36
 Analyst: JJW
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.10		mg/kg	0.0074	0.0013	1
Fluorene	0.023		mg/kg	0.0074	0.00089	1
Phenanthrene	0.048		mg/kg	0.0074	0.00063	1
Anthracene	ND		mg/kg	0.0074	0.00059	1
Pyrene	0.028		mg/kg	0.0074	0.00052	1
Benzo(a)anthracene	0.014		mg/kg	0.0074	0.00070	1
Chrysene	0.018		mg/kg	0.0074	0.00056	1
Benzo(b)fluoranthene	0.016		mg/kg	0.0074	0.00070	1
Benzo(a)pyrene	0.018		mg/kg	0.0074	0.00089	1
Benzo(ghi)perylene	0.022		mg/kg	0.0074	0.00063	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	47		30-120
4-Terphenyl-d14	79		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-04 D
 Client ID: PB190-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 09:05
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 12:52
 Analyst: JJW
 Percent Solids: 76%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.22		mg/kg	0.017	0.0031	2
Fluorene	0.57		mg/kg	0.017	0.0021	2
Phenanthrene	1.2		mg/kg	0.017	0.0015	2
Anthracene	ND		mg/kg	0.017	0.0014	2
Pyrene	0.050		mg/kg	0.017	0.0012	2
Benzo(a)anthracene	0.0094	J	mg/kg	0.017	0.0016	2
Chrysene	0.013	J	mg/kg	0.017	0.0013	2
Benzo(b)fluoranthene	0.011	J	mg/kg	0.017	0.0016	2
Benzo(a)pyrene	0.010	J	mg/kg	0.017	0.0021	2
Benzo(ghi)perylene	0.013	J	mg/kg	0.017	0.0015	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	142	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	84		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-05
 Client ID: PB190-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 09:25
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 21:02
 Analyst: DV
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0067	J	mg/kg	0.0083	0.0015	1
Fluorene	0.012		mg/kg	0.0083	0.0010	1
Phenanthrene	0.037		mg/kg	0.0083	0.00070	1
Anthracene	0.0070	J	mg/kg	0.0083	0.00066	1
Pyrene	0.010		mg/kg	0.0083	0.00058	1
Benzo(a)anthracene	0.0022	J	mg/kg	0.0083	0.00079	1
Chrysene	0.0012	J	mg/kg	0.0083	0.00062	1
Benzo(b)fluoranthene	ND		mg/kg	0.0083	0.00079	1
Benzo(a)pyrene	ND		mg/kg	0.0083	0.0010	1
Benzo(ghi)perylene	ND		mg/kg	0.0083	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	56		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-06
 Client ID: PB190-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 09:40
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/04/21 00:49
 Analyst: DV
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.18		mg/kg	0.0080	0.0014	1
Fluorene	0.33		mg/kg	0.0080	0.00096	1
Phenanthrene	0.51		mg/kg	0.0080	0.00068	1
Anthracene	0.072		mg/kg	0.0080	0.00064	1
Pyrene	0.028		mg/kg	0.0080	0.00056	1
Benzo(a)anthracene	0.0026	J	mg/kg	0.0080	0.00076	1
Chrysene	0.0024	J	mg/kg	0.0080	0.00060	1
Benzo(b)fluoranthene	0.0012	J	mg/kg	0.0080	0.00076	1
Benzo(a)pyrene	ND		mg/kg	0.0080	0.00096	1
Benzo(ghi)perylene	0.0012	J	mg/kg	0.0080	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	158	Q	23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	68		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-07 D
 Client ID: PB190-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 09:55
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 13:08
 Analyst: JJW
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.32		mg/kg	0.076	0.014	10
Fluorene	2.6		mg/kg	0.076	0.0091	10
Phenanthrene	5.4		mg/kg	0.076	0.0064	10
Anthracene	ND		mg/kg	0.076	0.0061	10
Pyrene	0.22		mg/kg	0.076	0.0053	10
Benzo(a)anthracene	0.011	J	mg/kg	0.076	0.0072	10
Chrysene	0.017	J	mg/kg	0.076	0.0057	10
Benzo(b)fluoranthene	ND		mg/kg	0.076	0.0072	10
Benzo(a)pyrene	ND		mg/kg	0.076	0.0091	10
Benzo(ghi)perylene	ND		mg/kg	0.076	0.0064	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	130	Q	23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	91		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-08
 Client ID: PB190-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 10:05
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 21:18
 Analyst: DV
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0081	0.0015	1
Fluorene	ND		mg/kg	0.0081	0.00098	1
Phenanthrene	0.0015	J	mg/kg	0.0081	0.00069	1
Anthracene	ND		mg/kg	0.0081	0.00065	1
Pyrene	0.00065	J	mg/kg	0.0081	0.00057	1
Benzo(a)anthracene	ND		mg/kg	0.0081	0.00077	1
Chrysene	ND		mg/kg	0.0081	0.00061	1
Benzo(b)fluoranthene	ND		mg/kg	0.0081	0.00077	1
Benzo(a)pyrene	ND		mg/kg	0.0081	0.00098	1
Benzo(ghi)perylene	ND		mg/kg	0.0081	0.00069	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	59		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-09 D
 Client ID: PB190-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 10:35
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 13:24
 Analyst: JJW
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.33		mg/kg	0.079	0.014	10
Fluorene	1.6		mg/kg	0.079	0.0094	10
Phenanthrene	3.6		mg/kg	0.079	0.0067	10
Anthracene	ND		mg/kg	0.079	0.0063	10
Pyrene	0.089		mg/kg	0.079	0.0055	10
Benzo(a)anthracene	0.0094	J	mg/kg	0.079	0.0075	10
Chrysene	ND		mg/kg	0.079	0.0059	10
Benzo(b)fluoranthene	ND		mg/kg	0.079	0.0075	10
Benzo(a)pyrene	ND		mg/kg	0.079	0.0094	10
Benzo(ghi)perylene	ND		mg/kg	0.079	0.0067	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	153	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	89		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-10
 Client ID: PB190-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 21:34
 Analyst: DV
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0081	0.0015	1
Fluorene	ND		mg/kg	0.0081	0.00097	1
Phenanthrene	ND		mg/kg	0.0081	0.00069	1
Anthracene	ND		mg/kg	0.0081	0.00065	1
Pyrene	ND		mg/kg	0.0081	0.00057	1
Benzo(a)anthracene	ND		mg/kg	0.0081	0.00077	1
Chrysene	ND		mg/kg	0.0081	0.00061	1
Benzo(b)fluoranthene	ND		mg/kg	0.0081	0.00077	1
Benzo(a)pyrene	ND		mg/kg	0.0081	0.00097	1
Benzo(ghi)perylene	ND		mg/kg	0.0081	0.00069	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	52		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-11
 Client ID: PB190-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:20
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 21:51
 Analyst: DV
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0081	0.0015	1
Fluorene	ND		mg/kg	0.0081	0.00098	1
Phenanthrene	ND		mg/kg	0.0081	0.00069	1
Anthracene	ND		mg/kg	0.0081	0.00065	1
Pyrene	ND		mg/kg	0.0081	0.00057	1
Benzo(a)anthracene	ND		mg/kg	0.0081	0.00077	1
Chrysene	ND		mg/kg	0.0081	0.00061	1
Benzo(b)fluoranthene	ND		mg/kg	0.0081	0.00077	1
Benzo(a)pyrene	ND		mg/kg	0.0081	0.00098	1
Benzo(ghi)perylene	ND		mg/kg	0.0081	0.00069	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	53		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-12
 Client ID: PB190-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:30
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 22:07
 Analyst: DV
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0080	0.0014	1
Fluorene	ND		mg/kg	0.0080	0.00096	1
Phenanthrene	ND		mg/kg	0.0080	0.00068	1
Anthracene	ND		mg/kg	0.0080	0.00064	1
Pyrene	0.00056	J	mg/kg	0.0080	0.00056	1
Benzo(a)anthracene	0.00096	J	mg/kg	0.0080	0.00076	1
Chrysene	ND		mg/kg	0.0080	0.00060	1
Benzo(b)fluoranthene	ND		mg/kg	0.0080	0.00076	1
Benzo(a)pyrene	ND		mg/kg	0.0080	0.00096	1
Benzo(ghi)perylene	ND		mg/kg	0.0080	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	120		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	59		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-13
 Client ID: PB190-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:45
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 22:23
 Analyst: DV
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0080	0.0014	1
Fluorene	ND		mg/kg	0.0080	0.00096	1
Phenanthrene	ND		mg/kg	0.0080	0.00068	1
Anthracene	ND		mg/kg	0.0080	0.00064	1
Pyrene	ND		mg/kg	0.0080	0.00056	1
Benzo(a)anthracene	0.00092	J	mg/kg	0.0080	0.00076	1
Chrysene	ND		mg/kg	0.0080	0.00060	1
Benzo(b)fluoranthene	ND		mg/kg	0.0080	0.00076	1
Benzo(a)pyrene	ND		mg/kg	0.0080	0.00096	1
Benzo(ghi)perylene	ND		mg/kg	0.0080	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	125	Q	23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	63		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-14
 Client ID: PB190-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:55
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 22:39
 Analyst: DV
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0079	0.0014	1
Fluorene	ND		mg/kg	0.0079	0.00095	1
Phenanthrene	ND		mg/kg	0.0079	0.00068	1
Anthracene	ND		mg/kg	0.0079	0.00064	1
Pyrene	ND		mg/kg	0.0079	0.00056	1
Benzo(a)anthracene	ND		mg/kg	0.0079	0.00075	1
Chrysene	ND		mg/kg	0.0079	0.00060	1
Benzo(b)fluoranthene	ND		mg/kg	0.0079	0.00075	1
Benzo(a)pyrene	ND		mg/kg	0.0079	0.00095	1
Benzo(ghi)perylene	ND		mg/kg	0.0079	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	120		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-15
 Client ID: PB190-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 12:15
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 22:55
 Analyst: DV
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0084	0.0015	1
Fluorene	ND		mg/kg	0.0084	0.0010	1
Phenanthrene	ND		mg/kg	0.0084	0.00072	1
Anthracene	ND		mg/kg	0.0084	0.00067	1
Pyrene	ND		mg/kg	0.0084	0.00059	1
Benzo(a)anthracene	ND		mg/kg	0.0084	0.00080	1
Chrysene	ND		mg/kg	0.0084	0.00063	1
Benzo(b)fluoranthene	ND		mg/kg	0.0084	0.00080	1
Benzo(a)pyrene	ND		mg/kg	0.0084	0.0010	1
Benzo(ghi)perylene	ND		mg/kg	0.0084	0.00072	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	59		30-120
4-Terphenyl-d14	56		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-16
 Client ID: PB190-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 12:30
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 23:12
 Analyst: DV
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0081	0.0014	1
Fluorene	ND		mg/kg	0.0081	0.00097	1
Phenanthrene	0.00089	J	mg/kg	0.0081	0.00069	1
Anthracene	ND		mg/kg	0.0081	0.00064	1
Pyrene	0.0018	J	mg/kg	0.0081	0.00056	1
Benzo(a)anthracene	0.0024	J	mg/kg	0.0081	0.00077	1
Chrysene	0.0015	J	mg/kg	0.0081	0.00060	1
Benzo(b)fluoranthene	0.0021	J	mg/kg	0.0081	0.00077	1
Benzo(a)pyrene	0.0011	J	mg/kg	0.0081	0.00097	1
Benzo(ghi)perylene	0.00093	J	mg/kg	0.0081	0.00069	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	49		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-17
 Client ID: PB882-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 13:20
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 23:28
 Analyst: DV
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0078	0.0014	1
Fluorene	ND		mg/kg	0.0078	0.00093	1
Phenanthrene	0.00093	J	mg/kg	0.0078	0.00066	1
Anthracene	ND		mg/kg	0.0078	0.00062	1
Pyrene	0.0014	J	mg/kg	0.0078	0.00054	1
Benzo(a)anthracene	0.0014	J	mg/kg	0.0078	0.00074	1
Chrysene	0.00066	J	mg/kg	0.0078	0.00058	1
Benzo(b)fluoranthene	0.00078	J	mg/kg	0.0078	0.00074	1
Benzo(a)pyrene	ND		mg/kg	0.0078	0.00093	1
Benzo(ghi)perylene	ND		mg/kg	0.0078	0.00066	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	50		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-18
 Client ID: PB882-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 13:40
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/03/21 23:44
 Analyst: DV
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0072	0.0013	1
Fluorene	ND		mg/kg	0.0072	0.00087	1
Phenanthrene	ND		mg/kg	0.0072	0.00062	1
Anthracene	ND		mg/kg	0.0072	0.00058	1
Pyrene	ND		mg/kg	0.0072	0.00051	1
Benzo(a)anthracene	0.00094	J	mg/kg	0.0072	0.00069	1
Chrysene	ND		mg/kg	0.0072	0.00054	1
Benzo(b)fluoranthene	ND		mg/kg	0.0072	0.00069	1
Benzo(a)pyrene	ND		mg/kg	0.0072	0.00087	1
Benzo(ghi)perylene	ND		mg/kg	0.0072	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	125	Q	23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	66		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-19
 Client ID: DUP-16
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 00:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/04/21 00:00
 Analyst: DV
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 08/02/21 08:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0074	0.0013	1
Fluorene	ND		mg/kg	0.0074	0.00088	1
Phenanthrene	ND		mg/kg	0.0074	0.00062	1
Anthracene	ND		mg/kg	0.0074	0.00059	1
Pyrene	ND		mg/kg	0.0074	0.00051	1
Benzo(a)anthracene	ND		mg/kg	0.0074	0.00070	1
Chrysene	ND		mg/kg	0.0074	0.00055	1
Benzo(b)fluoranthene	ND		mg/kg	0.0074	0.00070	1
Benzo(a)pyrene	ND		mg/kg	0.0074	0.00088	1
Benzo(ghi)perylene	ND		mg/kg	0.0074	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	131	Q	23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	65		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-20
 Client ID: FB-210729-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 12:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/04/21 21:03
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 08/03/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	60		15-120
4-Terphenyl-d14	72		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-21
 Client ID: FB-210729-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 14:00
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/04/21 21:22
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 08/03/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	61		15-120
4-Terphenyl-d14	70		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 08/03/21 20:29
Analyst: DV

Extraction Method: EPA 3546
Extraction Date: 08/02/21 08:18

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-19 Batch: WG1530420-1					
Naphthalene	ND		mg/kg	0.0065	0.0012
Fluorene	ND		mg/kg	0.0065	0.00078
Phenanthrene	ND		mg/kg	0.0065	0.00055
Anthracene	ND		mg/kg	0.0065	0.00052
Pyrene	ND		mg/kg	0.0065	0.00045
Benzo(a)anthracene	ND		mg/kg	0.0065	0.00062
Chrysene	ND		mg/kg	0.0065	0.00048
Benzo(b)fluoranthene	ND		mg/kg	0.0065	0.00062
Benzo(a)pyrene	ND		mg/kg	0.0065	0.00078
Benzo(ghi)perylene	ND		mg/kg	0.0065	0.00055

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	82		25-120
Phenol-d6	95		10-120
Nitrobenzene-d5	126	Q	23-120
2-Fluorobiphenyl	70		30-120
2,4,6-Tribromophenol	126		10-136
4-Terphenyl-d14	77		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D-SIM
 Analytical Date: 08/04/21 20:44
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 08/03/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 20-21 Batch: WG1531042-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	51		15-120
4-Terphenyl-d14	59		41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-19 Batch: WG1530420-2 WG1530420-3								
Naphthalene	72		63		40-140	13		50
Fluorene	75		64		40-140	16		50
Phenanthrene	72		61		40-140	17		50
Anthracene	79		67		40-140	16		50
Pyrene	79		68		35-142	15		50
Benzo(a)anthracene	83		71		40-140	16		50
Chrysene	65		54		40-140	18		50
Benzo(b)fluoranthene	78		65		40-140	18		50
Benzo(a)pyrene	81		68		40-140	17		50
Benzo(ghi)perylene	73		61		40-140	18		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	80		70		25-120
Phenol-d6	91		78		10-120
Nitrobenzene-d5	121	Q	106		23-120
2-Fluorobiphenyl	64		56		30-120
2,4,6-Tribromophenol	112		95		10-136
4-Terphenyl-d14	63		55		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 20-21 Batch: WG1531042-2 WG1531042-3								
Naphthalene	54		48		40-140	12		40
Fluorene	58		54		40-140	7		40
Phenanthrene	52		50		40-140	4		40
Anthracene	56		53		40-140	6		40
Pyrene	60		60		26-127	0		40
Benzo(a)anthracene	55		54		40-140	2		40
Chrysene	51		50		40-140	2		40
Benzo(b)fluoranthene	59		59		40-140	0		40
Benzo(a)pyrene	60		58		40-140	3		40
Benzo(ghi)perylene	56		56		40-140	0		40

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	86		77		23-120
2-Fluorobiphenyl	57		52		15-120
4-Terphenyl-d14	64		64		41-149



INORGANICS & MISCELLANEOUS



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-01

Date Collected: 07/29/21 08:35

Client ID: PB190-01-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.1		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2140781

Project Number: 200.00135.005.03

Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-02

Date Collected: 07/29/21 08:45

Client ID: PB190-02-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.1		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-03
Client ID: PB190-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 08:55
Date Received: 07/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.4		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-04
 Client ID: PB190-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 09:05
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.2		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2140781

Project Number: 200.00135.005.03

Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-05

Date Collected: 07/29/21 09:25

Client ID: PB190-09-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.2		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2140781

Project Number: 200.00135.005.03

Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-06

Date Collected: 07/29/21 09:40

Client ID: PB190-05-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-07

Date Collected: 07/29/21 09:55

Client ID: PB190-06-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.2		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-08

Date Collected: 07/29/21 10:05

Client ID: PB190-07-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.0		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-09

Date Collected: 07/29/21 10:35

Client ID: PB190-08-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.8		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-10

Date Collected: 07/29/21 11:00

Client ID: PB190-12-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.9		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-11
 Client ID: PB190-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 11:20
 Date Received: 07/29/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.1		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-12

Date Collected: 07/29/21 11:30

Client ID: PB190-21-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.3		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-13

Date Collected: 07/29/21 11:45

Client ID: PB190-20-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-14

Date Collected: 07/29/21 11:55

Client ID: PB190-19-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-15

Date Collected: 07/29/21 12:15

Client ID: PB190-18-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.7		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2140781

Project Number: 200.00135.005.03

Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-16

Date Collected: 07/29/21 12:30

Client ID: PB190-13-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-17

Date Collected: 07/29/21 13:20

Client ID: PB882-01-SS01

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

SAMPLE RESULTS

Lab ID: L2140781-18
Client ID: PB882-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/29/21 13:40
Date Received: 07/29/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**SAMPLE RESULTS**

Lab ID: L2140781-19

Date Collected: 07/29/21 00:00

Client ID: DUP-16

Date Received: 07/29/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.3		%	0.100	NA	1	-	07/30/21 08:48	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2140781

Report Date: 08/10/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-19 QC Batch ID: WG1529712-1 QC Sample: L2140781-01 Client ID: PB190-01-SS01						
Solids, Total	80.1	80.2	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2140781-01A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2140781-01B	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-01C	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-01D	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		SUB-TOTAL LEAD()
L2140781-01E	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-8270SIM(14)
L2140781-01F	Plastic 120ml unpreserved	C	NA		4.1	Y	Absent		TS(7)
L2140781-02A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2140781-02B	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-02C	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-02D	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		SUB-TOTAL LEAD()
L2140781-02E	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-8270SIM(14)
L2140781-02F	Plastic 120ml unpreserved	C	NA		4.1	Y	Absent		TS(7)
L2140781-03A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2140781-03B	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-03C	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-03D	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		SUB-TOTAL LEAD()
L2140781-03E	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-8270SIM(14)
L2140781-03F	Plastic 120ml unpreserved	C	NA		4.1	Y	Absent		TS(7)
L2140781-04A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2140781-04B	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-04C	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Serial_No:08102109:55
Lab Number: L2140781
Report Date: 08/10/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2140781-04D	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		SUB-TOTAL LEAD()
L2140781-04E	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-8270SIM(14)
L2140781-04F	Plastic 120ml unpreserved	C	NA		4.1	Y	Absent		TS(7)
L2140781-05A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2140781-05B	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-05C	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-05D	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		SUB-TOTAL LEAD()
L2140781-05E	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-8270SIM(14)
L2140781-05F	Plastic 120ml unpreserved	C	NA		4.1	Y	Absent		TS(7)
L2140781-06A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2140781-06B	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-06C	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-06D	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		SUB-TOTAL LEAD()
L2140781-06E	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-8270SIM(14)
L2140781-06F	Plastic 120ml unpreserved	C	NA		4.1	Y	Absent		TS(7)
L2140781-07A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2140781-07B	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-07C	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-07D	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		SUB-TOTAL LEAD()
L2140781-07E	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-8270SIM(14)
L2140781-07F	Plastic 120ml unpreserved	C	NA		4.1	Y	Absent		TS(7)
L2140781-08A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2140781-08B	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-08C	Vial water preserved	C	NA		4.1	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-08D	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		SUB-TOTAL LEAD()
L2140781-08E	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-8270SIM(14)
L2140781-08F	Plastic 120ml unpreserved	C	NA		4.1	Y	Absent		TS(7)
L2140781-09A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2140781-09B	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-09C	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-09D	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2140781-09E	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2140781-09F	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2140781-10A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2140781-10B	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-10C	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-10D	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2140781-10E	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2140781-10F	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2140781-11A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2140781-11B	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-11C	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-11D	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2140781-11E	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2140781-11F	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2140781-12A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2140781-12B	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-12C	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-12D	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2140781-12E	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2140781-12F	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2140781-13A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2140781-13B	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-13C	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-13D	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2140781-13E	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2140781-13F	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2140781-14A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2140781-14B	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-14C	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-14D	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2140781-14E	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2140781-14F	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2140781-15A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2140781-15B	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-15C	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-15D	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2140781-15E	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2140781-15F	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2140781-16A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2140781-16B	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-16C	Vial water preserved	B	NA		3.2	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-16D	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2140781-16E	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2140781-16F	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2140781-17A	Vial MeOH preserved	A	NA		4.8	Y	Absent		PA-8260HLW(14)
L2140781-17B	Vial water preserved	A	NA		4.8	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-17C	Vial water preserved	A	NA		4.8	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-17D	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.8	Y	Absent		SUB-TOTAL LEAD()
L2140781-17E	Glass 120ml/4oz unpreserved	A	NA		4.8	Y	Absent		PA-8270SIM(14)
L2140781-17F	Plastic 120ml unpreserved	A	NA		4.8	Y	Absent		TS(7)
L2140781-18A	Vial MeOH preserved	A	NA		4.8	Y	Absent		PA-8260HLW(14)
L2140781-18B	Vial water preserved	A	NA		4.8	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-18C	Vial water preserved	A	NA		4.8	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2140781**Project Number:** 200.00135.005.03**Report Date:** 08/10/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2140781-18D	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.8	Y	Absent		SUB-TOTAL LEAD()
L2140781-18E	Glass 120ml/4oz unpreserved	A	NA		4.8	Y	Absent		PA-8270SIM(14)
L2140781-18F	Plastic 120ml unpreserved	A	NA		4.8	Y	Absent		TS(7)
L2140781-19A	Vial MeOH preserved	A	NA		4.8	Y	Absent		PA-8260HLW(14)
L2140781-19B	Vial water preserved	A	NA		4.8	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-19C	Vial water preserved	A	NA		4.8	Y	Absent	30-JUL-21 07:25	PA-8260HLW(14)
L2140781-19D	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.8	Y	Absent		SUB-TOTAL LEAD()
L2140781-19E	Glass 120ml/4oz unpreserved	A	NA		4.8	Y	Absent		PA-8270SIM(14)
L2140781-19F	Plastic 120ml unpreserved	A	NA		4.8	Y	Absent		TS(7)
L2140781-20A	Vial HCl preserved	A	NA		4.8	Y	Absent		PA-8260(14)
L2140781-20B	Vial HCl preserved	A	NA		4.8	Y	Absent		PA-8260(14)
L2140781-20C	Vial HCl preserved	A	NA		4.8	Y	Absent		PA-8260(14)
L2140781-20D	Vial Na2S2O3 preserved	A	NA		4.8	Y	Absent		8011(14)
L2140781-20E	Vial Na2S2O3 preserved	A	NA		4.8	Y	Absent		8011(14)
L2140781-20F	Amber 250ml unpreserved	A	7	7	4.8	Y	Absent		PA-8270SIM-LVII(7)
L2140781-20G	Amber 250ml unpreserved	A	7	7	4.8	Y	Absent		PA-8270SIM-LVII(7)
L2140781-20H	Plastic 250ml HNO3 preserved	A	<2	<2	4.8	Y	Absent		SUB-TOTAL LEAD()
L2140781-21A	Vial HCl preserved	A	NA		4.8	Y	Absent		PA-8260(14)
L2140781-21B	Vial HCl preserved	A	NA		4.8	Y	Absent		PA-8260(14)
L2140781-21C	Vial HCl preserved	A	NA		4.8	Y	Absent		PA-8260(14)
L2140781-21D	Vial Na2S2O3 preserved	A	NA		4.8	Y	Absent		8011(14)
L2140781-21E	Vial Na2S2O3 preserved	A	NA		4.8	Y	Absent		8011(14)
L2140781-21F	Amber 250ml unpreserved	A	7	7	4.8	Y	Absent		PA-8270SIM-LVII(7)
L2140781-21G	Amber 250ml unpreserved	A	7	7	4.8	Y	Absent		PA-8270SIM-LVII(7)
L2140781-21H	Plastic 250ml HNO3 preserved	A	<2	<2	4.8	Y	Absent		SUB-TOTAL LEAD()
L2140781-22A	Vial HCl preserved	A	NA		4.8	Y	Absent		PA-8260(14)
L2140781-22B	Vial HCl preserved	A	NA		4.8	Y	Absent		PA-8260(14)
L2140781-22C	Vial Na2S2O3 preserved	A	NA		4.8	Y	Absent		8011(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2140781-22D	Vial Na2S2O3 preserved	A	NA		4.8	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2140781
Report Date: 08/10/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: PHILADELPHIA REFINERY

Lab Number: L2140781

Project Number: 200.00135.005.03

Report Date: 08/10/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 83

Westborough, MA
 TEL: 508-898-9220
 FAX: 508-866-9193

Manfield, MA
 TEL: 508-822-9300
 FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hlcglobal.com

Date Rec'd in Lab: 7/30/21

ALPHA Job #: L2140781

Report Information Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client Info PO #: 3884

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist	Sample Specific Comments	TOTAL # BOTTLES
		Date	Time															
40781 -01	PB190-01-SS01	7/24	0835	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-02	PB190-02-SS01		0845			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-03	PB190-03-SS01		0855			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-04	PB190-04-SS01		0905			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-05	PB190-05-SS01		0925			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-06	PB190-06-SS01		0940			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-07	PB190-07-SS01		0955			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-08	PB190-08-SS01		1005			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-09	PB190-09-SS01		1035			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
-10	PB190-12-SS01		1100			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Lab to do
 Preservation
 Lab to do
 (Please specify below)

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: [Signature] Date/Time: 7/29/21 1450
 Received By: [Signature] Date/Time: 7/30/21 0210

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

CHAIN OF CUSTODY

PAGE 2 OF 3



Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-827-3288

Project Information

Project Name: Philadelphia Refinery

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Fax: Standard Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds).
Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/30/21

ALPHA Job #: L2140781

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program

Criteria

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist	SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES
		Date	Time															
40781 -11	PB190-17-5501	7/29	1120	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		8
-12	PB190-21-5501		1130	S		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-13	PB190-20-5501		1145	S		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-14	PB190-19-5501		1155	S		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-15	PB190-18-5501		1215	S		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-16	PB190-13-5501		1230	S		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
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-18	PB882-02-5501		1340	S		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-19	Dup-16		-	S		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-20	FB-210729-1		1200	W		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		9

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	7/29/1450	<i>[Signature]</i>	7/29/21 1450
<i>[Signature]</i>	7/29/21 1655	<i>[Signature]</i>	7/29/21 1800
<i>[Signature]</i>	7/29	<i>[Signature]</i>	7/29/21 2240

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

PADEP Short List Analytical List:

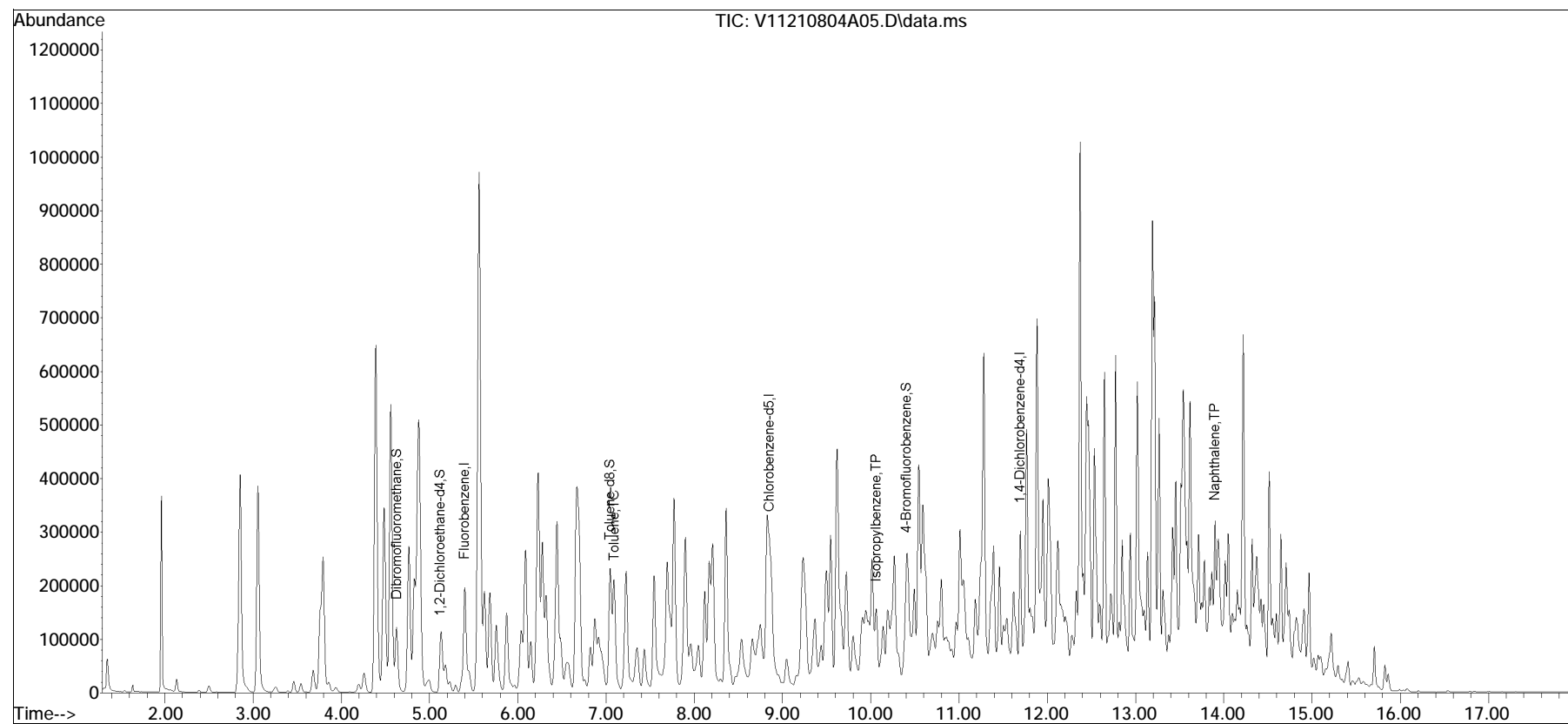
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
6. Waste Oil – benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, lead

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804A\
Data File : V11210804A05.D
Acq On : 04 Aug 2021 10:48 am
Operator : VOA111:KJD
Sample : L2140781-01D,31H,6.27,5,0.025,A
Misc : WG1531648,ICAL18049
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Aug 04 18:03:42 2021
Quant Method : I:\VOLATILES\VOA111\2021\210804A\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04A\V11210804A01.D•

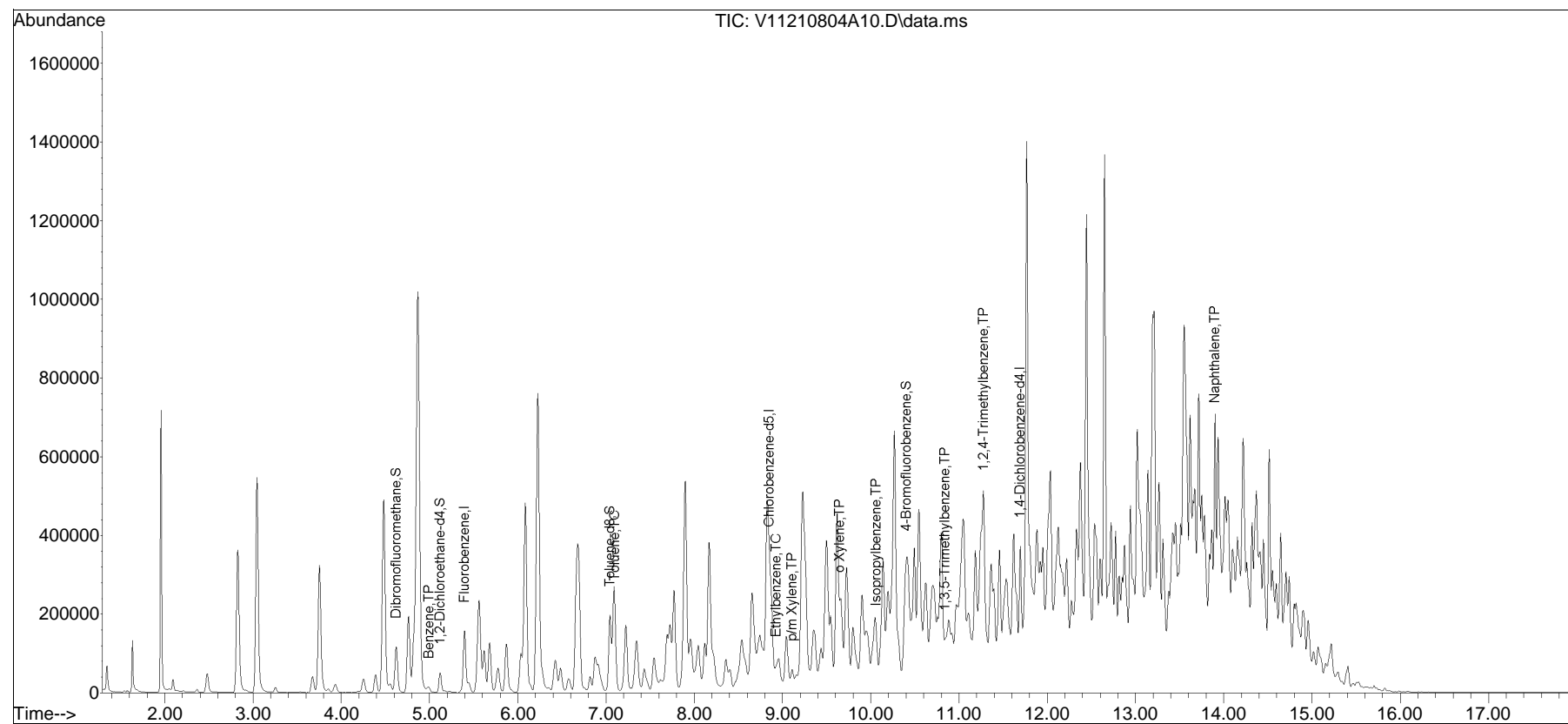


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804A\
 Data File : V11210804A10.D
 Acq On : 04 Aug 2021 12:58 pm
 Operator : VOA111:KJD
 Sample : L2140781-03,31H,3.15,5,0.100,,A
 Misc : WG1531648,ICAL18049
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Aug 04 18:06:21 2021
 Quant Method : I:\VOLATILES\VOA111\2021\210804A\V111_210609A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Wed Jun 09 18:48:01 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04A\V11210804A01.D•

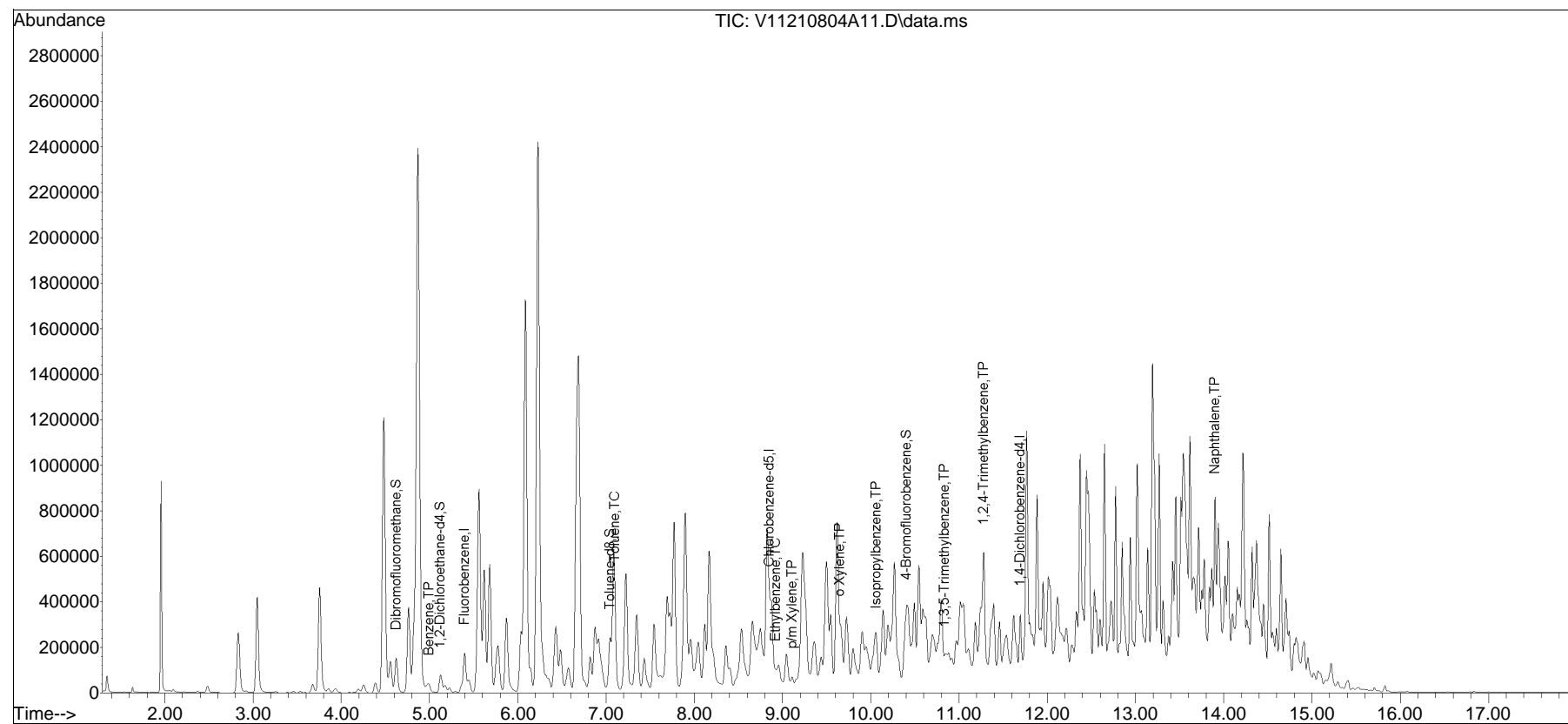


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804A\
 Data File : V11210804A11.D
 Acq On : 04 Aug 2021 01:24 pm
 Operator : VOA111:KJD
 Sample : L2140781-04,31H,5.52,5,0.100,,A
 Misc : WG1531648,ICAL18049
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: Aug 04 18:06:43 2021
 Quant Method : I:\VOLATILES\VOA111\2021\210804A\V111_210609A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Wed Jun 09 18:48:01 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04A\V11210804A01.D•

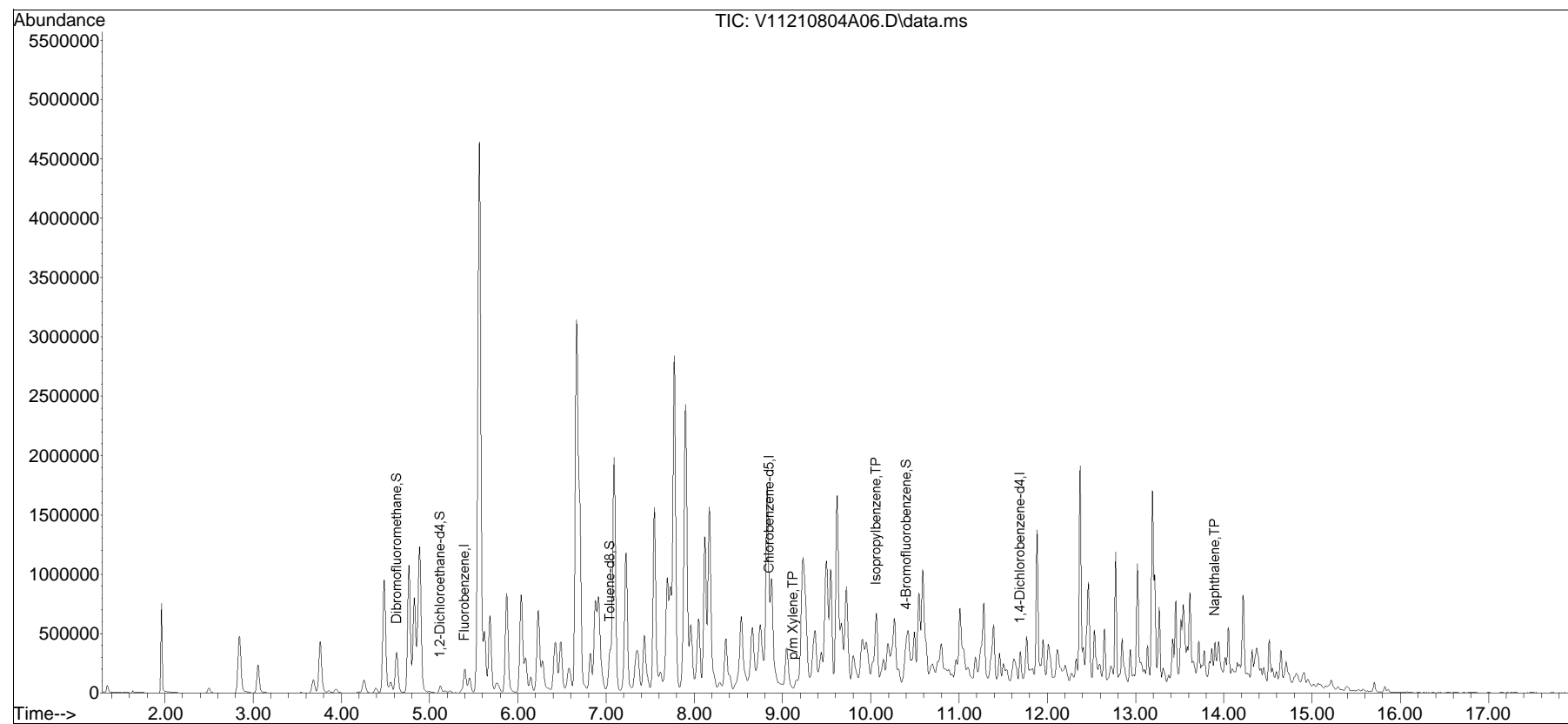


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804A\
Data File : V11210804A06.D
Acq On : 04 Aug 2021 11:14 am
Operator : VOA111:KJD
Sample : L2140781-06D,31H,5.29,5,0.025,,A
Misc : WG1531648,ICAL18049
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Aug 04 18:04:30 2021
Quant Method : I:\VOLATILES\VOA111\2021\210804A\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04A\V11210804A01.D•

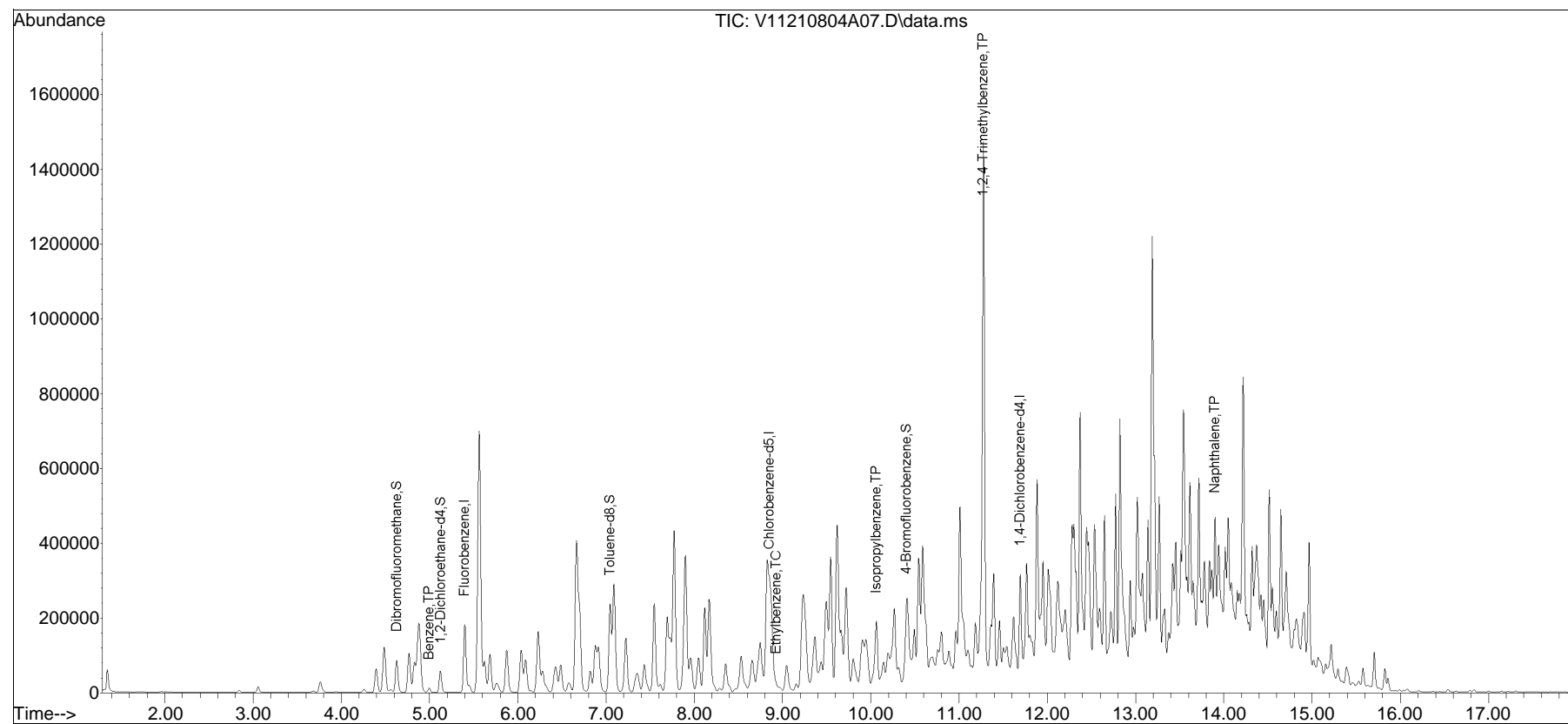


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804A\
Data File : V11210804A07.D
Acq On : 04 Aug 2021 11:40 am
Operator : VOA111:KJD
Sample : L2140781-07D,31H,4.47,5,0.010,,A
Misc : WG1531648,ICAL18049
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Aug 04 18:05:01 2021
Quant Method : I:\VOLATILES\VOA111\2021\210804A\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04A\V11210804A01.D•

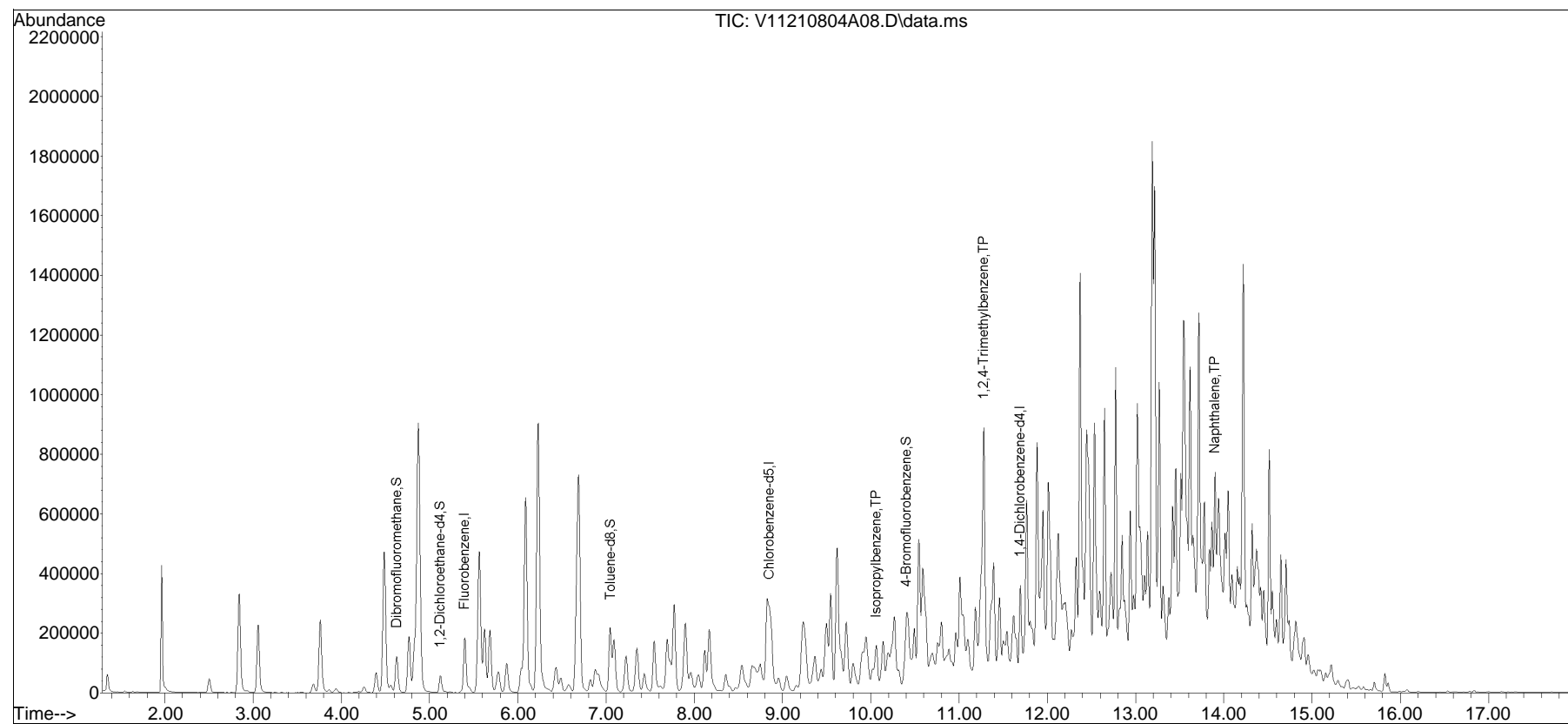


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804A\
Data File : V11210804A08.D
Acq On : 04 Aug 2021 12:06 pm
Operator : VOA111:KJD
Sample : L2140781-09D,31H,6.35,5,0.010,,A
Misc : WG1531648,ICAL18049
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Aug 04 18:05:20 2021
Quant Method : I:\VOLATILES\VOA111\2021\210804A\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04A\V11210804A01.D•





Dayton, NJ

08/06/21

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Alpha Analytical Laboratories, Inc.

Alpha Analytical, PA

L2140781

SGS Job Number: JD29239

Sampling Date: 07/29/21

Report to:

Alpha Analytical Laboratories, Inc.
Eight Walkup Drive
Westborough, MA 01581
nyakes@alphalab.com; subreports@alphalab.com

ATTN: Nadine Yakes

Total number of pages in report: 54



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.



Mike Earp

Client Service contact: Michelle Jenkins 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

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1

2

3

4

5

SGS North America Inc.

Sample Summary

Alpha Analytical Laboratories, Inc.

Job No: JD29239

Alpha Analytical, PA
Project No: L2140781

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JD29239-1	07/29/21	08:35	08/02/21	SO	Soil	PB190-01-SS01
JD29239-2	07/29/21	08:45	08/02/21	SO	Soil	PB190-02-SS01
JD29239-3	07/29/21	08:55	08/02/21	SO	Soil	PB190-03-SS01
JD29239-4	07/29/21	09:05	08/02/21	SO	Soil	PB190-04-SS01
JD29239-5	07/29/21	09:25	08/02/21	SO	Soil	PB190-09-SS01
JD29239-6	07/29/21	09:40	08/02/21	SO	Soil	PB190-05-SS01
JD29239-7	07/29/21	09:55	08/02/21	SO	Soil	PB190-06-SS01
JD29239-8	07/29/21	10:05	08/02/21	SO	Soil	PB190-07-SS01
JD29239-9	07/29/21	10:35	08/02/21	SO	Soil	PB190-08-SS01
JD29239-10	07/29/21	11:00	08/02/21	SO	Soil	PB190-12-SS01
JD29239-11	07/29/21	11:20	08/02/21	SO	Soil	PB190-17-SS01
JD29239-12	07/29/21	11:30	08/02/21	SO	Soil	PB190-21-SS01
JD29239-13	07/29/21	11:45	08/02/21	SO	Soil	PB190-20-SS01

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SGS North America Inc.

Sample Summary

(continued)

Alpha Analytical Laboratories, Inc.

Job No: JD29239Alpha Analytical, PA
Project No: L2140781

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JD29239-14	07/29/21	11:55	08/02/21	SO	Soil	PB190-19-SS01
JD29239-15	07/29/21	12:15	08/02/21	SO	Soil	PB190-18-SS01
JD29239-16	07/29/21	12:30	08/02/21	SO	Soil	PB190-13-SS01
JD29239-17	07/29/21	13:20	08/02/21	SO	Soil	PB882-01-SS01
JD29239-18	07/29/21	13:40	08/02/21	SO	Soil	PB882-02-SS01
JD29239-19	07/29/21	00:00	08/02/21	SO	Soil	DUP-16
JD29239-20	07/29/21	12:00	08/02/21	AQ	Field Blank Soil	FB-210729-1
JD29239-21	07/29/21	14:00	08/02/21	AQ	Field Blank Soil	FB-210729-2

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Summary of Hits

Job Number: JD29239
Account: Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA
Collected: 07/29/21

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD29239-1	PB190-01-SS01					
Lead		10.3	2.4		mg/kg	SW846 6010D
JD29239-2	PB190-02-SS01					
Lead		10	2.5		mg/kg	SW846 6010D
JD29239-3	PB190-03-SS01					
Lead		113	2.3		mg/kg	SW846 6010D
JD29239-4	PB190-04-SS01					
Lead		18.6	2.6		mg/kg	SW846 6010D
JD29239-5	PB190-09-SS01					
Lead		8.2	2.5		mg/kg	SW846 6010D
JD29239-6	PB190-05-SS01					
Lead		7.5	2.2		mg/kg	SW846 6010D
JD29239-7	PB190-06-SS01					
Lead		7.8	2.4		mg/kg	SW846 6010D
JD29239-8	PB190-07-SS01					
Lead		8.2	2.4		mg/kg	SW846 6010D
JD29239-9	PB190-08-SS01					
Lead		8.1	2.4		mg/kg	SW846 6010D
JD29239-10	PB190-12-SS01					
Lead		6.3	2.4		mg/kg	SW846 6010D
JD29239-11	PB190-17-SS01					
Lead		8.4	2.4		mg/kg	SW846 6010D

Summary of Hits

Job Number: JD29239
Account: Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA
Collected: 07/29/21

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD29239-12	PB190-21-SS01					
Lead		8.3	2.3		mg/kg	SW846 6010D
JD29239-13	PB190-20-SS01					
Lead		7.3	2.4		mg/kg	SW846 6010D
JD29239-14	PB190-19-SS01					
Lead		8.3	2.5		mg/kg	SW846 6010D
JD29239-15	PB190-18-SS01					
Lead		8.1	2.5		mg/kg	SW846 6010D
JD29239-16	PB190-13-SS01					
Lead		6.8	2.4		mg/kg	SW846 6010D
JD29239-17	PB882-01-SS01					
Lead		4.2	2.4		mg/kg	SW846 6010D
JD29239-18	PB882-02-SS01					
Lead		5.3	2.3		mg/kg	SW846 6010D
JD29239-19	DUP-16					
Lead		3.9	2.2		mg/kg	SW846 6010D
JD29239-20	FB-210729-1					
No hits reported in this sample.						
JD29239-21	FB-210729-2					
No hits reported in this sample.						



Dayton, NJ

Section 3



Sample Results

Report of Analysis

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Report of Analysis

Page 1 of 1

Client Sample ID: PB190-01-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-1	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 80.1
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	10.3	2.4	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB190-02-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-2	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 81.1
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	10	2.5	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB190-03-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-3	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 88.4
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	113	2.3	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB190-04-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-4	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 76.2
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	18.6	2.6	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB190-09-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-5	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 80.2
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	8.2	2.5	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

Page 1 of 1

Client Sample ID: PB190-05-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-6	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 82.2
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	7.5	2.2	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

Page 1 of 1

Client Sample ID: PB190-06-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-7	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 85.2
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	7.8	2.4	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

Page 1 of 1

Client Sample ID: PB190-07-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-8	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 80.0
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	8.2	2.4	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB190-08-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-9	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 82.8
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	8.1	2.4	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

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3.10
3

Client Sample ID: PB190-12-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-10	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 79.9
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	6.3	2.4	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

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3.11
3

Client Sample ID: PB190-17-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-11	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 81.1
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	8.4	2.4	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

Page 1 of 1

3.12
3

Client Sample ID: PB190-21-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-12	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 83.3
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	8.3	2.3	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

Page 1 of 1

Client Sample ID: PB190-20-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-13	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 81.5
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	7.3	2.4	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

Page 1 of 1

3.14

3

Client Sample ID: PB190-19-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-14	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 81.5
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	8.3	2.5	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

Page 1 of 1

3.15
3

Client Sample ID: PB190-18-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-15	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 78.7
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	8.1	2.5	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

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3.16

3

Client Sample ID: PB190-13-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-16	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 82.3
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	6.8	2.4	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

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Report of Analysis

Page 1 of 1

3.17
3

Client Sample ID: PB882-01-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-17	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 85.1
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	4.2	2.4	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

3.18

3

Client Sample ID: PB882-02-SS01	Date Sampled: 07/29/21
Lab Sample ID: JD29239-18	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 89.6
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	5.3	2.3	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

3.19

3

Client Sample ID: DUP-16	Date Sampled: 07/29/21
Lab Sample ID: JD29239-19	Date Received: 08/02/21
Matrix: SO - Soil	Percent Solids: 90.3
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	3.9	2.2	mg/kg	1	08/05/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50945

(2) Prep QC Batch: MP27883

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

3.20
3

Client Sample ID: FB-210729-1	Date Sampled: 07/29/21
Lab Sample ID: JD29239-20	Date Received: 08/02/21
Matrix: AQ - Field Blank Soil	Percent Solids: n/a
Project: Alpha Analytical, PA	

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	<3.0	3.0	ug/l	1	08/04/21	08/05/21 ND	SW846 6010D ¹	SW846 3010A ²

(1) Instrument QC Batch: MA50941

(2) Prep QC Batch: MP27844

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

3.21

3

Client Sample ID: FB-210729-2	Date Sampled: 07/29/21
Lab Sample ID: JD29239-21	Date Received: 08/02/21
Matrix: AQ - Field Blank Soil	Percent Solids: n/a
Project: Alpha Analytical, PA	

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	<3.0	3.0	ug/l	1	08/04/21	08/05/21 ND	SW846 6010D ¹	SW846 3010A ²

(1) Instrument QC Batch: MA50941

(2) Prep QC Batch: MP27844

RL = Reporting Limit



Dayton, NJ

Section 4


4

Misc. Forms

Custody Documents and Other Forms


Includes the following where applicable:

- Chain of Custody

		Subcontract Chain of Custody SCS North America 2325 US-130 Dayton NJ 08810		7021219 Alpha Job Number L2140731	
Client: Alpha Analytical Labs Address: Eight Wading Crane Woburn MA 01891-1019 Phone: 201 812 9137 Email: mylab@alphaab.com		Project Location: MA Project Manager: Nadine Yabus Due Date: Deliverables:		State/ Federal Program: Regulatory Group:	
Reference: Following Alpha Job Number in Order: 08102109:55, L2140731 Report to include Method Blank, ICS/LLSD					
Additional Comments: Send all results reports to: s.dempsey@alphaab.com					
Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch
	PH101-01-5001	07-28-21 08:15	SOL	Total Lead	501 31 A36
	PH101-02-5001	07-28-21 08:45	SOL	Total Lead	
	PH101-03-5001	07-28-21 08:55	SOL	Total Lead	
	PH101-04-5001	07-28-21 09:05	SOL	Total Lead	
	PH101-05-5001	07-28-21 09:20	SOL	Total Lead	
	PH101-06-5001	07-28-21 09:40	SOL	Total Lead	
	PH101-07-5001	07-28-21 09:55	SOL	Total Lead	
	PH101-08-5001	07-28-21 10:10	SOL	Total Lead	
Returned By: <i>[Signature]</i>		Date/Time: <i>7/28/21 17:00</i>		Received By: <i>[Signature]</i>	
<i>[Signature]</i>		Date/Time: <i>7/28/21 17:00</i>		Received By: <i>[Signature]</i>	


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		Subcontract Chain of Custody SGS - North America 2535 US-1 JB Dayton, NJ 08810		7/20/19 Alpha Job Number LE140761	
Client Information Client: Alpha Analytical Labs Address: Eight Walkup Drive Westborough, MA 01581-1015 Phone: 303 812 3011 Email: hylkes@alphalab.com		Project Location: PA Project Manager: Nedine Yacobi Due Date: Deliverables:		Regulatory Program: Regulatory Goals:	
Project Specific Information: Analytical Report: Results Report					
Reference Involving Alpha Lab Number or Site report/Reference: LE140761			Report to include Method Name: LE140761		
Additional Comments: Send all requests to hylkes@alphalab.com					
Lab ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch CC
	PA1901-01-5521	07-28-2019 17:01	SCA	Tox Lead	
	PA1901-01-5521	07-28-2019 17:20	SCA	SA Lead	
	PA1901-01-5521	07-28-2019 17:30	SCA	As Lead	
	PA1901-01-5521	07-28-2019 17:45	SCA	Tox Lead	
	PA1901-01-5521	07-28-2019 17:55	SCA	Tox Lead	
	PA1901-01-5521	07-28-2019 18:15	SCA	Tox Lead	
	PA1901-01-5521	07-28-2019 18:30	SCA	Tox Lead	
	PA1901-01-5521	07-28-2019 18:45	SCA	Tox Lead	
Released By:		Date/Time	Received By:	Date/Time	
		7/20/19 17:00		7/20/19 17:00	
		7/20/19 2:18:3		7/20/19 11:38	
Form No. 4L sub:00					

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		Subcontract Chain of Custody SO: North America 2235 US 130 Dayton NJ 02810		JD29239 Alpha Job Number LR140781	
Client: Alpha Analytical Labs Address: Eight Wakeup Drive Westborough, MA 01581-1012 Phone: 201.512.9031 Email: myalpha@alphalab.com		Project Location: PA Project Manager: Nicole Yocum Date Owed: Deliverable:		State/Federal Program: Regulatory Criteria:	
Project Special Requirements and/or Report Requirements:					
Reference following Alpha JOC Number or use report/Deliverable: 12140781			Report to include Method Book, LCRS QSD		
Additional Comments: Send all results/emails to subreports@alphalab.com					
Lab ID	Client ID	Emission Date/Time	Sample Matrix	Analysis	Batch ID
	T 06662 07/25/17 M 18-14-17 VL 18-210-17-1 18-210120-2	17-08-21 12:40 17-08-21 00:20 07-25-17 12:00 07-25-17 14:00	MCL PCB MCLM MCLM	Total Lead In-situ Pb In-situ Lead Total Lead	
Relinquished By:		Date/Time:		Received By:	Initials/Date
XXXXXXXXXX		7/25/17 17:00		XXXXXXXXXX	7/25/17 17:00
XXXXXXXXXX		7/25/17 14:00		XXXXXXXXXX	7/25/17 14:00
Form kit: AI-1010103					

4.1
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JD29239: Chain of Custody

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SGS Sample Receipt Summary

Job Number: JD29239

Client: ALPHA ANALYTICAL

Project: L2140781

Date / Time Received: 8/2/2021 11:35:00 AM

Delivery Method:

Airbill #s:

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0);

Cooler Temps (Corrected) °C: Cooler 1: (3.0);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	_____	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	1	

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 212820	pH 12+: 203117A	Other: (Specify) _____
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Comments

SM089-03
Rev. Date 12/7/17

JD29239: Chain of Custody

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Dayton, NJ

Section 5

Metals Analysis

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29239
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27844
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/04/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	16	46		
Antimony	6.0	2.2	4.7		
Arsenic	3.0	1.3	2.8		
Barium	200	.4	13		
Beryllium	1.0	.1	.5		
Bismuth	20	2.1	4		
Boron	100	1	63		
Cadmium	3.0	.2	1		
Calcium	5000	5.6	99		
Cerium	100				
Chromium	10	.5	2		
Cobalt	50	.4	2.6		
Copper	10	1	5.9		
Iron	100	11	32		
Lead	3.0	1.2	1.8	0.10	<3.0
Lithium	50	2.3	7.3		
Magnesium	5000	54	140		
Manganese	15	.1	1.4		
Molybdenum	20	.4	3.6		
Nickel	10	.3	1.7		
Phosphorus	50	1.8	18		
Potassium	10000	55	200		
Selenium	10	2	4.9		
Silicon	200	1.3	100		
Silver	10	.9	1.9		
Sodium	10000	11	570		
Strontium	10	.1	1		
Sulfur	50	4.1	45		
Thallium	10	1.6	1.8		
Tin	10	.9	3.7		
Titanium	10	.4	2.5		
Tungsten	50	2	40		
Vanadium	50	.6	1.8		

5.1.1
5

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29239
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27844
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/04/21

Metal	RL	IDL	MDL	MB	
				raw	final

Zinc	20	.1	6.9		
Zirconium	10	.4	4.1		

Associated samples MP27844: JD29239-20, JD29239-21

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.1.1
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27844
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/04/21

Metal	JD29214-1 Original MS	SpikeLot MPSPK2		% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	anr				
Beryllium					
Bismuth					
Boron					
Cadmium	anr				
Calcium					
Cerium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron					
Lead	0.0	1900	2000	95.0	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	anr				
Phosphorus					
Potassium					
Selenium	anr				
Silicon					
Silver	anr				
Sodium					
Strontium					
Sulfur					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					

5.1.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29239
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27844
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/04/21

Metal	JD29214-1 Original MS	SpikeLot MPSPK2	% Rec	QC Limits
-------	--------------------------	--------------------	-------	--------------

Zinc anr

Zirconium

Associated samples MP27844: JD29239-20, JD29239-21

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27844
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/04/21 08/04/21

Metal	JD29214-1 Original MSD	SpikeLot MPSPK2 % Rec			MSD RPD	QC Limit	JD29214-1 Original DUP	RPD	QC Limits
Aluminum									
Antimony									
Arsenic	anr								
Barium	anr								
Beryllium									
Bismuth									
Boron									
Cadmium	anr								
Calcium									
Cerium									
Chromium	anr								
Cobalt									
Copper	anr								
Iron									
Lead	0.0	1900	2000	95.0	0.0	20	0.0	0.0	NC 0-20
Lithium									
Magnesium									
Manganese									
Molybdenum									
Nickel	anr								
Phosphorus									
Potassium									
Selenium	anr								
Silicon									
Silver	anr								
Sodium									
Strontium									
Sulfur									
Thallium									
Tin									
Titanium									
Tungsten									
Vanadium									

5.1.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27844
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/04/21 08/04/21

Metal	JD29214-1 Original MSD	Spike/lot MPSPK2 % Rec	MSD RPD	QC Limit	JD29214-1 Original DUP	RPD	QC Limits
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Zinc anr

Zirconium

Associated samples MP27844: JD29239-20, JD29239-21

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

5.1.2
5

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27844
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/04/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Bismuth				
Boron				
Cadmium	anr			
Calcium				
Cerium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	1930	2000	96.5	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium	anr			
Silicon				
Silver	anr			
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				

5.1.3
5

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29239
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27844
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/04/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
-------	---------------	--------------------	-------	--------------

Zinc anr

Zirconium

Associated samples MP27844: JD29239-20, JD29239-21

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.1.3
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27844
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/04/21

Metal	JD29214-1 Original SDL 1:5	%DIF	QC Limits
-------	-------------------------------	------	--------------

Aluminum			
Antimony			
Arsenic	anr		
Barium	anr		
Beryllium			
Bismuth			
Boron			
Cadmium	anr		
Calcium			
Cerium			
Chromium	anr		
Cobalt			
Copper	anr		
Iron			
Lead	0.00	0.00	NC 0-10
Lithium			
Magnesium			
Manganese			
Molybdenum			
Nickel	anr		
Phosphorus			
Potassium			
Selenium	anr		
Silicon			
Silver	anr		
Sodium			
Strontium			
Sulfur			
Thallium			
Tin			
Titanium			
Tungsten			
Vanadium			

5.1.4
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29239
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27844
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/04/21

Metal	JD29214-1 Original SDL 1:5	%DIF	QC Limits
-------	-------------------------------	------	--------------

Zinc anr

Zirconium

Associated samples MP27844: JD29239-20, JD29239-21

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.1.4
5

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27883
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/05/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.6	8.1		
Antimony	2.0	.25	.41		
Arsenic	2.0	.2	.28		
Barium	20	.04	1.9		
Beryllium	0.20	.01	.08		
Bismuth	2.0	.36	.52		
Boron	10	.19	1.5		
Cadmium	0.50	.04	.07		
Calcium	500	.56	44		
Chromium	1.0	.05	.37		
Cobalt	5.0	.05	.28		
Copper	2.5	.1	.84		
Iron	50	1.1	19		
Lead	2.0	.12	.41	0.090	<2.0
Lithium	5.0	.23	.92		
Magnesium	500	6.5	14		
Manganese	1.5	.02	.41		
Molybdenum	2.0	.04	.32		
Nickel	4.0	.03	.35		
Phosphorus	20	.41	3.3		
Potassium	1000	5.5	32		
Selenium	2.0	.35	.65		
Silicon	20	.16	11		
Silver	0.50	.11	.17		
Sodium	1000	1.1	78		
Strontium	5.0	.01	.18		
Sulfur	10	.44	9.4		
Thallium	1.0	.25	.58		
Tin	20	.1	3.8		
Titanium	1.0	.04	.34		
Tungsten	5.0	.28	1.8		
Vanadium	5.0	.06	.19		
Zinc	5.0	.01	2.3		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29239
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27883
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/05/21

Metal	RL	IDL	MDL	MB raw	final
-------	----	-----	-----	-----------	-------

Zirconium 2.0 .04 .23

Associated samples MP27883: JD29239-1, JD29239-2, JD29239-3, JD29239-4, JD29239-5, JD29239-6, JD29239-7, JD29239-8, JD29239-9, JD29239-10, JD29239-11, JD29239-12, JD29239-13, JD29239-14, JD29239-15, JD29239-16, JD29239-17, JD29239-18, JD29239-19

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.2.1
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27883
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/05/21

Metal	JD29239-9 Original MS	SpikeLot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	8.1	229	239	92.4 75-125
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

5.2.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27883
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/05/21

Metal	JD29239-9 Original MS	SpikeLot MPSPK2	% Rec	QC Limits
-------	--------------------------	--------------------	-------	--------------

Zirconium

Associated samples MP27883: JD29239-1, JD29239-2, JD29239-3, JD29239-4, JD29239-5, JD29239-6, JD29239-7, JD29239-8, JD29239-9, JD29239-10, JD29239-11, JD29239-12, JD29239-13, JD29239-14, JD29239-15, JD29239-16, JD29239-17, JD29239-18, JD29239-19

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

5.2.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27883
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/05/21

Metal	JD29239-9 Original MSD	Spikelot MPSPK2	% Rec	MSD RPD	QC Limit	
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead	8.1	228	239	91.9	0.4	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						
Zinc						

5.2.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27883
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/05/21

Metal	JD29239-9 Original MSD	SpikeLot MPSPK2	% Rec	MSD RPD	QC Limit
-------	---------------------------	--------------------	-------	------------	-------------

Zirconium

Associated samples MP27883: JD29239-1, JD29239-2, JD29239-3, JD29239-4, JD29239-5, JD29239-6, JD29239-7, JD29239-8, JD29239-9, JD29239-10, JD29239-11, JD29239-12, JD29239-13, JD29239-14, JD29239-15, JD29239-16, JD29239-17, JD29239-18, JD29239-19

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

5.2.2
5

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27883
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/05/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	187	200	93.5	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

5.2.3
5



SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29239
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27883
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/05/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
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Zirconium

Associated samples MP27883: JD29239-1, JD29239-2, JD29239-3, JD29239-4, JD29239-5, JD29239-6, JD29239-7, JD29239-8, JD29239-9, JD29239-10, JD29239-11, JD29239-12, JD29239-13, JD29239-14, JD29239-15, JD29239-16, JD29239-17, JD29239-18, JD29239-19

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.2.3
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29239
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27883
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/05/21

Metal	JD29239-9 Original SDL 1:5	%DIF	QC Limits
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Aluminum			
Antimony			
Arsenic			
Barium			
Beryllium			
Bismuth			
Boron			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead	67.6	71.8	6.2 0-10
Lithium			
Magnesium			
Manganese			
Molybdenum			
Nickel			
Phosphorus			
Potassium			
Selenium			
Silicon			
Silver			
Sodium			
Strontium			
Sulfur			
Thallium			
Tin			
Titanium			
Tungsten			
Vanadium			
Zinc			

5.2.4
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29239
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27883
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/05/21

	JD29239-9		QC
Metal	Original SDL 1:5	%DIF	Limits

Zirconium

Associated samples MP27883: JD29239-1, JD29239-2, JD29239-3, JD29239-4, JD29239-5, JD29239-6, JD29239-7, JD29239-8, JD29239-9, JD29239-10, JD29239-11, JD29239-12, JD29239-13, JD29239-14, JD29239-15, JD29239-16, JD29239-17, JD29239-18, JD29239-19

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.2.4
5



ANALYTICAL REPORT

Lab Number:	L2141062
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	08/11/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2141062

Report Date: 08/11/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2141062-01	PB882-15-SS01	SOIL	PHILADELPHIA, PA	07/30/21 08:40	07/30/21
L2141062-02	PB882-17-SS01	SOIL	PHILADELPHIA, PA	07/30/21 09:00	07/30/21
L2141062-03	PB882-19-SS01	SOIL	PHILADELPHIA, PA	07/30/21 09:30	07/30/21
L2141062-04	PB882-18-SS01	SOIL	PHILADELPHIA, PA	07/30/21 10:30	07/30/21
L2141062-05	PB882-10-SS01	SOIL	PHILADELPHIA, PA	07/30/21 11:10	07/30/21
L2141062-06	PB882-14-SS01	SOIL	PHILADELPHIA, PA	07/30/21 11:20	07/30/21
L2141062-07	PB882-20-SS01	SOIL	PHILADELPHIA, PA	07/30/21 11:30	07/30/21
L2141062-08	PB882-16-SS01	SOIL	PHILADELPHIA, PA	07/30/21 11:40	07/30/21
L2141062-09	PB126-01-SS01	SOIL	PHILADELPHIA, PA	07/30/21 13:00	07/30/21
L2141062-10	PB126-02-SS01	SOIL	PHILADELPHIA, PA	07/30/21 13:35	07/30/21
L2141062-11	PB126-03-SS01	SOIL	PHILADELPHIA, PA	07/30/21 14:05	07/30/21
L2141062-12	PB126-04-SS01	SOIL	PHILADELPHIA, PA	07/30/21 14:15	07/30/21
L2141062-13	PB126-05-SS01	SOIL	PHILADELPHIA, PA	07/30/21 14:20	07/30/21
L2141062-14	PB126-06-SS01	SOIL	PHILADELPHIA, PA	07/30/21 14:30	07/30/21
L2141062-15	DUP-17	SOIL	PHILADELPHIA, PA	07/30/21 00:00	07/30/21
L2141062-16	FB-210730	WATER	PHILADELPHIA, PA	07/30/21 15:00	07/30/21
L2141062-17	TB-210730	WATER	PHILADELPHIA, PA	07/30/21 00:00	07/30/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Case Narrative (continued)

Report Submission

August 11, 2021: This final report includes the results of all requested analyses.

August 10, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

The Metals analysis was subcontracted. A copy of the laboratory report is included as an addendum. Please note: This data is only available in PDF format and is not available on Data Merger.

Volatile Organics

L2141062-05D, -10D, -13D, and -14D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2141062-08D and -08D2: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (199% and 136%, respectively) due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

The surrogate recovery for the following samples is outside the acceptance criteria for 4-bromofluorobenzene; however, the samples were not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report:

L2141062-05D: 177%

L2141062-06: 134%

L2141062-09: 149%

L2141062-10D: 199%

L2141062-13D: 186%

L2141062-14D: 222%

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Case Narrative (continued)

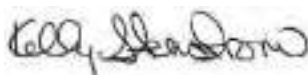
Semivolatile Organics by SIM

L2141062-02D, -05D, and -14D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2141062-16: The Field Blank has results for pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, and benzo(ghi)perylene present above the reporting limits. The sample was verified as being labeled correctly by the laboratory and the previous analysis showed there was no potential for carry over.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 08/11/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-01
 Client ID: PB882-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 08:40
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 02:25
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-02
 Client ID: PB882-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 09:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 02:49
 Analyst: JC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-03
 Client ID: PB882-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 09:30
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 03:14
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	104		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-04
 Client ID: PB882-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 10:30
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 03:39
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	124		70-130
Dibromofluoromethane	102		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-05 D
 Client ID: PB882-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 11:10
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 05:19
 Analyst: JC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.38	0.038	4
Benzene	ND		mg/kg	0.095	0.032	4
1,2-Dichloroethane	ND		mg/kg	0.19	0.049	4
Toluene	ND		mg/kg	0.19	0.10	4
1,2-Dibromoethane	ND		mg/kg	0.095	0.056	4
Ethylbenzene	ND		mg/kg	0.19	0.027	4
p/m-Xylene	ND		mg/kg	0.38	0.11	4
o-Xylene	ND		mg/kg	0.19	0.056	4
Xylenes, Total	ND		mg/kg	0.19	0.056	4
Isopropylbenzene	1.2		mg/kg	0.19	0.021	4
1,3,5-Trimethylbenzene	ND		mg/kg	0.38	0.037	4
1,2,4-Trimethylbenzene	ND		mg/kg	0.38	0.064	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	177	Q	70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-06
 Client ID: PB882-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 11:20
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 04:04
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.0031		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0050		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.0077		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	134	Q	70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-07
 Client ID: PB882-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 11:30
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 04:29
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00021	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-08 D2
 Client ID: PB882-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 11:40
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 09:46
 Analyst: AJK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
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1,2,4-Trimethylbenzene	64.		mg/kg	1.0	0.17	10
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	119		70-130
4-Bromofluorobenzene	136	Q	70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-08 D
 Client ID: PB882-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 11:40
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 05:45
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.20	0.020	2
Benzene	ND		mg/kg	0.050	0.017	2
1,2-Dichloroethane	ND		mg/kg	0.10	0.026	2
Toluene	ND		mg/kg	0.10	0.054	2
1,2-Dibromoethane	ND		mg/kg	0.050	0.029	2
Ethylbenzene	17.		mg/kg	0.10	0.014	2
p/m-Xylene	32.		mg/kg	0.20	0.056	2
o-Xylene	7.2		mg/kg	0.10	0.029	2
Xylenes, Total	39.		mg/kg	0.10	0.029	2
Isopropylbenzene	6.4		mg/kg	0.10	0.011	2
1,3,5-Trimethylbenzene	18.		mg/kg	0.20	0.019	2
1,2,4-Trimethylbenzene	61.	E	mg/kg	0.20	0.034	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	124		70-130
4-Bromofluorobenzene	199	Q	70-130
Dibromofluoromethane	90		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-09
 Client ID: PB126-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 13:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 04:53
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.0014		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	0.00073	J	mg/kg	0.00098	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	0.00030	J	mg/kg	0.00098	0.00014	1
p/m-Xylene	0.0010	J	mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00029	1
Xylenes, Total	0.0010	J	mg/kg	0.00098	0.00029	1
Isopropylbenzene	0.022		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	149	Q	70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-10 D
 Client ID: PB126-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 13:35
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 10:12
 Analyst: AJK
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.48	0.048	4
Benzene	ND		mg/kg	0.12	0.040	4
1,2-Dichloroethane	ND		mg/kg	0.24	0.061	4
Toluene	ND		mg/kg	0.24	0.13	4
1,2-Dibromoethane	ND		mg/kg	0.12	0.070	4
Ethylbenzene	0.053	J	mg/kg	0.24	0.034	4
p/m-Xylene	ND		mg/kg	0.48	0.13	4
o-Xylene	ND		mg/kg	0.24	0.069	4
Xylenes, Total	ND		mg/kg	0.24	0.069	4
Isopropylbenzene	9.6		mg/kg	0.24	0.026	4
1,3,5-Trimethylbenzene	ND		mg/kg	0.48	0.046	4
1,2,4-Trimethylbenzene	0.083	J	mg/kg	0.48	0.080	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	118		70-130
4-Bromofluorobenzene	199	Q	70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-11
 Client ID: PB126-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 14:05
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 11:54
 Analyst: AJK
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	0.00029	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.0076		mg/kg	0.00097	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-12
 Client ID: PB126-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 14:15
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 12:19
 Analyst: AJK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00042	J	mg/kg	0.0020	0.00021	1
Benzene	0.0014		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	0.0070		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.00091	J	mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.00091	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.038		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.00084	J	mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.0042		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	120		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-13 D
 Client ID: PB126-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 14:20
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 11:04
 Analyst: AJK
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.31	0.031	2
Benzene	ND		mg/kg	0.078	0.026	2
1,2-Dichloroethane	ND		mg/kg	0.16	0.040	2
Toluene	ND		mg/kg	0.16	0.085	2
1,2-Dibromoethane	ND		mg/kg	0.078	0.046	2
Ethylbenzene	0.085	J	mg/kg	0.16	0.022	2
p/m-Xylene	0.13	J	mg/kg	0.31	0.088	2
o-Xylene	ND		mg/kg	0.16	0.046	2
Xylenes, Total	0.13	J	mg/kg	0.16	0.046	2
Isopropylbenzene	3.8		mg/kg	0.16	0.017	2
1,3,5-Trimethylbenzene	ND		mg/kg	0.31	0.030	2
1,2,4-Trimethylbenzene	0.16	J	mg/kg	0.31	0.052	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	186	Q	70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-14 D
 Client ID: PB126-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 14:30
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 10:38
 Analyst: AJK
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.91	0.091	4
Benzene	0.27		mg/kg	0.23	0.075	4
1,2-Dichloroethane	ND		mg/kg	0.45	0.12	4
Toluene	ND		mg/kg	0.45	0.25	4
1,2-Dibromoethane	ND		mg/kg	0.23	0.13	4
Ethylbenzene	0.58		mg/kg	0.45	0.064	4
p/m-Xylene	0.80	J	mg/kg	0.91	0.25	4
o-Xylene	ND		mg/kg	0.45	0.13	4
Xylenes, Total	0.80	J	mg/kg	0.45	0.13	4
Isopropylbenzene	27.		mg/kg	0.45	0.049	4
1,3,5-Trimethylbenzene	ND		mg/kg	0.91	0.087	4
1,2,4-Trimethylbenzene	0.61	J	mg/kg	0.91	0.15	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	222	Q	70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-15
 Client ID: DUP-17
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 00:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 08/05/21 12:44
 Analyst: AJK
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0047	0.00047	1
Benzene	ND		mg/kg	0.0012	0.00039	1
1,2-Dichloroethane	ND		mg/kg	0.0023	0.00060	1
Toluene	ND		mg/kg	0.0023	0.0013	1
1,2-Dibromoethane	ND		mg/kg	0.0012	0.00069	1
Ethylbenzene	ND		mg/kg	0.0023	0.00033	1
p/m-Xylene	ND		mg/kg	0.0047	0.0013	1
o-Xylene	ND		mg/kg	0.0023	0.00068	1
Xylenes, Total	ND		mg/kg	0.0023	0.00068	1
Isopropylbenzene	ND		mg/kg	0.0023	0.00026	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0047	0.00045	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0047	0.00078	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-16
 Client ID: FB-210730
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 15:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 08/04/21 14:46
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 08/04/21 13:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-16
 Client ID: FB-210730
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 15:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 08/03/21 17:32
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-17
 Client ID: TB-210730
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 00:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 08/04/21 14:52
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 08/04/21 13:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-17
 Client ID: TB-210730
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 00:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 08/03/21 17:53
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
 Analytical Date: 08/04/21 14:21
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 08/04/21 13:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 16-17 Batch: WG1531419-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/03/21 17:12
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 16-17 Batch: WG1531532-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 08/04/21 21:20
 Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-04,06-07,09 Batch: WG1531904-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 08/05/21 09:21
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 08,10,13-14 Batch: WG1531906-10					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 08/04/21 21:20
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 05,08 Batch: WG1531906-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 08/05/21 09:21
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 11-12,15 Batch: WG1532117-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	97		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2141062

Report Date: 08/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 16-17 Batch: WG1531419-2									
1,2-Dibromoethane	105		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 16-17 Batch: WG1531532-3 WG1531532-4								
Methyl tert butyl ether	76		78		63-130	3		20
Benzene	86		90		70-130	5		20
1,2-Dichloroethane	81		83		70-130	2		20
Toluene	88		90		70-130	2		20
Ethylbenzene	88		91		70-130	3		20
p/m-Xylene	90		90		70-130	0		20
o-Xylene	85		90		70-130	6		20
Isopropylbenzene	88		90		70-130	2		20
1,3,5-Trimethylbenzene	89		89		64-130	0		20
1,2,4-Trimethylbenzene	90		88		70-130	2		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	86		87		70-130
Toluene-d8	94		92		70-130
4-Bromofluorobenzene	90		90		70-130
Dibromofluoromethane	93		95		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-04,06-07,09 Batch: WG1531904-3 WG1531904-4								
Methyl tert butyl ether	93		93		66-130	0		30
Benzene	86		83		70-130	4		30
1,2-Dichloroethane	88		87		70-130	1		30
Toluene	92		90		70-130	2		30
1,2-Dibromoethane	87		88		70-130	1		30
Ethylbenzene	99		96		70-130	3		30
p/m-Xylene	92		89		70-130	3		30
o-Xylene	92		90		70-130	2		30
Isopropylbenzene	108		105		70-130	3		30
1,3,5-Trimethylbenzene	108		105		70-130	3		30
1,2,4-Trimethylbenzene	109		107		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		100		70-130
Toluene-d8	109		109		70-130
4-Bromofluorobenzene	118		117		70-130
Dibromofluoromethane	95		95		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 05,08 Batch: WG1531906-3 WG1531906-4								
Methyl tert butyl ether	93		93		66-130	0		30
Benzene	86		83		70-130	4		30
1,2-Dichloroethane	88		87		70-130	1		30
Toluene	92		90		70-130	2		30
1,2-Dibromoethane	87		88		70-130	1		30
Ethylbenzene	99		96		70-130	3		30
p/m-Xylene	92		89		70-130	3		30
o-Xylene	92		90		70-130	2		30
Isopropylbenzene	108		105		70-130	3		30
1,3,5-Trimethylbenzene	108		105		70-130	3		30
1,2,4-Trimethylbenzene	109		107		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		100		70-130
Toluene-d8	108		109		70-130
4-Bromofluorobenzene	118		117		70-130
Dibromofluoromethane	95		95		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 08,10,13-14 Batch: WG1531906-8 WG1531906-9								
Methyl tert butyl ether	98		97		66-130	1		30
Benzene	87		85		70-130	2		30
1,2-Dichloroethane	92		92		70-130	0		30
Toluene	96		92		70-130	4		30
1,2-Dibromoethane	89		88		70-130	1		30
Ethylbenzene	103		99		70-130	4		30
p/m-Xylene	96		91		70-130	5		30
o-Xylene	96		91		70-130	5		30
Isopropylbenzene	113		108		70-130	5		30
1,3,5-Trimethylbenzene	112		108		70-130	4		30
1,2,4-Trimethylbenzene	112		109		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	100		103		70-130
Toluene-d8	111		107		70-130
4-Bromofluorobenzene	115		114		70-130
Dibromofluoromethane	94		96		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 11-12,15 Batch: WG1532117-3 WG1532117-4								
Methyl tert butyl ether	98		97		66-130	1		30
Benzene	87		85		70-130	2		30
1,2-Dichloroethane	92		92		70-130	0		30
Toluene	96		92		70-130	4		30
1,2-Dibromoethane	89		88		70-130	1		30
Ethylbenzene	103		99		70-130	4		30
p/m-Xylene	96		91		70-130	5		30
o-Xylene	96		91		70-130	5		30
Isopropylbenzene	113		108		70-130	5		30
1,3,5-Trimethylbenzene	112		108		70-130	4		30
1,2,4-Trimethylbenzene	112		109		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	100		103		70-130
Toluene-d8	111		107		70-130
4-Bromofluorobenzene	115		114		70-130
Dibromofluoromethane	94		96		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-01
 Client ID: PB882-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 08:40
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 12:59
 Analyst: JJW
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0094		mg/kg	0.0080	0.0014	1
Fluorene	0.015		mg/kg	0.0080	0.00096	1
Phenanthrene	0.079		mg/kg	0.0080	0.00068	1
Anthracene	0.024		mg/kg	0.0080	0.00064	1
Pyrene	0.047		mg/kg	0.0080	0.00056	1
Benzo(a)anthracene	0.030		mg/kg	0.0080	0.00076	1
Chrysene	0.023		mg/kg	0.0080	0.00060	1
Benzo(b)fluoranthene	0.024		mg/kg	0.0080	0.00076	1
Benzo(a)pyrene	0.019		mg/kg	0.0080	0.00096	1
Benzo(ghi)perylene	0.0076	J	mg/kg	0.0080	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	57		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-02 D
 Client ID: PB882-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 09:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 13:41
 Analyst: JJW
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0096	J	mg/kg	0.014	0.0026	2
Fluorene	0.088		mg/kg	0.014	0.0017	2
Phenanthrene	0.11		mg/kg	0.014	0.0012	2
Anthracene	ND		mg/kg	0.014	0.0012	2
Pyrene	0.0089	J	mg/kg	0.014	0.0010	2
Benzo(a)anthracene	0.0069	J	mg/kg	0.014	0.0014	2
Chrysene	0.028		mg/kg	0.014	0.0011	2
Benzo(b)fluoranthene	0.0048	J	mg/kg	0.014	0.0014	2
Benzo(a)pyrene	0.0020	J	mg/kg	0.014	0.0017	2
Benzo(ghi)perylene	0.0020	J	mg/kg	0.014	0.0012	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	111		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-03
 Client ID: PB882-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 09:30
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/05/21 19:37
 Analyst: DV
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0082	0.0015	1
Fluorene	ND		mg/kg	0.0082	0.00098	1
Phenanthrene	0.0014	J	mg/kg	0.0082	0.00070	1
Anthracene	ND		mg/kg	0.0082	0.00065	1
Pyrene	ND		mg/kg	0.0082	0.00057	1
Benzo(a)anthracene	ND		mg/kg	0.0082	0.00078	1
Chrysene	ND		mg/kg	0.0082	0.00061	1
Benzo(b)fluoranthene	ND		mg/kg	0.0082	0.00078	1
Benzo(a)pyrene	ND		mg/kg	0.0082	0.00098	1
Benzo(ghi)perylene	ND		mg/kg	0.0082	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	126	Q	23-120
2-Fluorobiphenyl	104		30-120
4-Terphenyl-d14	128	Q	18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-04
 Client ID: PB882-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 10:30
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/05/21 19:53
 Analyst: DV
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0079	0.0014	1
Fluorene	ND		mg/kg	0.0079	0.00094	1
Phenanthrene	0.0041	J	mg/kg	0.0079	0.00067	1
Anthracene	0.00075	J	mg/kg	0.0079	0.00063	1
Pyrene	0.0020	J	mg/kg	0.0079	0.00055	1
Benzo(a)anthracene	ND		mg/kg	0.0079	0.00075	1
Chrysene	ND		mg/kg	0.0079	0.00059	1
Benzo(b)fluoranthene	ND		mg/kg	0.0079	0.00075	1
Benzo(a)pyrene	ND		mg/kg	0.0079	0.00094	1
Benzo(ghi)perylene	ND		mg/kg	0.0079	0.00067	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	134	Q	23-120
2-Fluorobiphenyl	108		30-120
4-Terphenyl-d14	142	Q	18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-05 D
 Client ID: PB882-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 11:10
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/08/21 20:58
 Analyst: RP
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.16		mg/kg	0.036	0.0065	5
Fluorene	0.57		mg/kg	0.036	0.0043	5
Phenanthrene	1.4		mg/kg	0.036	0.0031	5
Anthracene	0.068		mg/kg	0.036	0.0029	5
Pyrene	0.083		mg/kg	0.036	0.0025	5
Benzo(a)anthracene	0.022	J	mg/kg	0.036	0.0034	5
Chrysene	0.27		mg/kg	0.036	0.0027	5
Benzo(b)fluoranthene	0.028	J	mg/kg	0.036	0.0034	5
Benzo(a)pyrene	0.014	J	mg/kg	0.036	0.0043	5
Benzo(ghi)perylene	0.018	J	mg/kg	0.036	0.0031	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	179	Q	23-120
2-Fluorobiphenyl	109		30-120
4-Terphenyl-d14	118		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-06 D
 Client ID: PB882-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 11:20
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/10/21 13:49
 Analyst: JJW
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.13		mg/kg	0.016	0.0029	2
Fluorene	0.29		mg/kg	0.016	0.0019	2
Phenanthrene	0.84		mg/kg	0.016	0.0014	2
Anthracene	ND		mg/kg	0.016	0.0013	2
Pyrene	0.050		mg/kg	0.016	0.0011	2
Benzo(a)anthracene	0.035		mg/kg	0.016	0.0015	2
Chrysene	0.16		mg/kg	0.016	0.0012	2
Benzo(b)fluoranthene	0.020		mg/kg	0.016	0.0015	2
Benzo(a)pyrene	0.018		mg/kg	0.016	0.0019	2
Benzo(ghi)perylene	0.0097	J	mg/kg	0.016	0.0014	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	168	Q	23-120
2-Fluorobiphenyl	99		30-120
4-Terphenyl-d14	114		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-07 D
 Client ID: PB882-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 11:30
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 14:29
 Analyst: JJW
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.062		mg/kg	0.016	0.0028	2
Fluorene	0.46		mg/kg	0.016	0.0019	2
Phenanthrene	1.2		mg/kg	0.016	0.0013	2
Anthracene	ND		mg/kg	0.016	0.0013	2
Pyrene	0.14		mg/kg	0.016	0.0011	2
Benzo(a)anthracene	0.076		mg/kg	0.016	0.0015	2
Chrysene	0.42		mg/kg	0.016	0.0012	2
Benzo(b)fluoranthene	0.074		mg/kg	0.016	0.0015	2
Benzo(a)pyrene	0.040		mg/kg	0.016	0.0019	2
Benzo(ghi)perylene	0.038		mg/kg	0.016	0.0013	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	95		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-08 D
 Client ID: PB882-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 11:40
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/10/21 13:32
 Analyst: JJW
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	4.2		mg/kg	0.077	0.014	10
Fluorene	0.78		mg/kg	0.077	0.0092	10
Phenanthrene	2.3		mg/kg	0.077	0.0065	10
Anthracene	ND		mg/kg	0.077	0.0062	10
Pyrene	0.16		mg/kg	0.077	0.0054	10
Benzo(a)anthracene	0.070	J	mg/kg	0.077	0.0073	10
Chrysene	0.44		mg/kg	0.077	0.0058	10
Benzo(b)fluoranthene	0.047	J	mg/kg	0.077	0.0073	10
Benzo(a)pyrene	0.036	J	mg/kg	0.077	0.0092	10
Benzo(ghi)perylene	0.035	J	mg/kg	0.077	0.0065	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	188	Q	23-120
2-Fluorobiphenyl	92		30-120
4-Terphenyl-d14	107		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-09
 Client ID: PB126-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 13:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/05/21 20:10
 Analyst: DV
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0080	0.0014	1
Fluorene	0.0011	J	mg/kg	0.0080	0.00096	1
Phenanthrene	0.0016	J	mg/kg	0.0080	0.00068	1
Anthracene	ND		mg/kg	0.0080	0.00064	1
Pyrene	ND		mg/kg	0.0080	0.00056	1
Benzo(a)anthracene	ND		mg/kg	0.0080	0.00076	1
Chrysene	ND		mg/kg	0.0080	0.00060	1
Benzo(b)fluoranthene	ND		mg/kg	0.0080	0.00076	1
Benzo(a)pyrene	ND		mg/kg	0.0080	0.00096	1
Benzo(ghi)perylene	ND		mg/kg	0.0080	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	101		30-120
4-Terphenyl-d14	136	Q	18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-10
 Client ID: PB126-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 13:35
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/05/21 20:26
 Analyst: DV
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0079	0.0014	1
Fluorene	0.0046	J	mg/kg	0.0079	0.00095	1
Phenanthrene	0.019		mg/kg	0.0079	0.00067	1
Anthracene	0.0044	J	mg/kg	0.0079	0.00063	1
Pyrene	0.016		mg/kg	0.0079	0.00056	1
Benzo(a)anthracene	0.0073	J	mg/kg	0.0079	0.00075	1
Chrysene	0.0040	J	mg/kg	0.0079	0.00059	1
Benzo(b)fluoranthene	0.0045	J	mg/kg	0.0079	0.00075	1
Benzo(a)pyrene	0.0028	J	mg/kg	0.0079	0.00095	1
Benzo(ghi)perylene	0.00079	J	mg/kg	0.0079	0.00067	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-11
 Client ID: PB126-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 14:05
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/05/21 20:43
 Analyst: DV
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		mg/kg	0.0080	0.0014	1
Fluorene	ND		mg/kg	0.0080	0.00096	1
Phenanthrene	0.0017	J	mg/kg	0.0080	0.00068	1
Anthracene	ND		mg/kg	0.0080	0.00064	1
Pyrene	0.0013	J	mg/kg	0.0080	0.00056	1
Benzo(a)anthracene	0.00088	J	mg/kg	0.0080	0.00076	1
Chrysene	ND		mg/kg	0.0080	0.00060	1
Benzo(b)fluoranthene	ND		mg/kg	0.0080	0.00076	1
Benzo(a)pyrene	ND		mg/kg	0.0080	0.00096	1
Benzo(ghi)perylene	ND		mg/kg	0.0080	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	100		30-120
4-Terphenyl-d14	127	Q	18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-12
 Client ID: PB126-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 14:15
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 15:02
 Analyst: JJW
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0014	J	mg/kg	0.0079	0.0014	1
Fluorene	ND		mg/kg	0.0079	0.00095	1
Phenanthrene	0.0017	J	mg/kg	0.0079	0.00067	1
Anthracene	ND		mg/kg	0.0079	0.00063	1
Pyrene	0.0020	J	mg/kg	0.0079	0.00055	1
Benzo(a)anthracene	0.0013	J	mg/kg	0.0079	0.00075	1
Chrysene	0.00079	J	mg/kg	0.0079	0.00059	1
Benzo(b)fluoranthene	ND		mg/kg	0.0079	0.00075	1
Benzo(a)pyrene	ND		mg/kg	0.0079	0.00095	1
Benzo(ghi)perylene	ND		mg/kg	0.0079	0.00067	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	114		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-13
 Client ID: PB126-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 14:20
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 15:18
 Analyst: JJW
 Percent Solids: 77%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.044		mg/kg	0.0085	0.0015	1
Fluorene	0.013		mg/kg	0.0085	0.0010	1
Phenanthrene	0.076		mg/kg	0.0085	0.00072	1
Anthracene	0.023		mg/kg	0.0085	0.00068	1
Pyrene	0.072		mg/kg	0.0085	0.00060	1
Benzo(a)anthracene	0.044		mg/kg	0.0085	0.00081	1
Chrysene	0.037		mg/kg	0.0085	0.00064	1
Benzo(b)fluoranthene	0.044		mg/kg	0.0085	0.00081	1
Benzo(a)pyrene	0.033		mg/kg	0.0085	0.0010	1
Benzo(ghi)perylene	0.014		mg/kg	0.0085	0.00072	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	108		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-14 D
 Client ID: PB126-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 14:30
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 15:35
 Analyst: JJW
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	1.4		mg/kg	0.039	0.0070	5
Fluorene	1.7		mg/kg	0.039	0.0046	5
Phenanthrene	1.9		mg/kg	0.039	0.0033	5
Anthracene	ND		mg/kg	0.039	0.0031	5
Pyrene	0.17		mg/kg	0.039	0.0027	5
Benzo(a)anthracene	0.062		mg/kg	0.039	0.0037	5
Chrysene	0.10		mg/kg	0.039	0.0029	5
Benzo(b)fluoranthene	0.10		mg/kg	0.039	0.0037	5
Benzo(a)pyrene	0.062		mg/kg	0.039	0.0046	5
Benzo(ghi)perylene	0.087		mg/kg	0.039	0.0033	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	339	Q	23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	112		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-15
 Client ID: DUP-17
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 00:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 15:51
 Analyst: JJW
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.0052	J	mg/kg	0.0082	0.0015	1
Fluorene	0.0037	J	mg/kg	0.0082	0.00098	1
Phenanthrene	0.053		mg/kg	0.0082	0.00070	1
Anthracene	0.014		mg/kg	0.0082	0.00066	1
Pyrene	0.11		mg/kg	0.0082	0.00057	1
Benzo(a)anthracene	0.092		mg/kg	0.0082	0.00078	1
Chrysene	0.080		mg/kg	0.0082	0.00061	1
Benzo(b)fluoranthene	0.11		mg/kg	0.0082	0.00078	1
Benzo(a)pyrene	0.085		mg/kg	0.0082	0.00098	1
Benzo(ghi)perylene	0.045		mg/kg	0.0082	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	99		30-120
4-Terphenyl-d14	114		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-16
 Client ID: FB-210730
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 15:00
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 08/07/21 17:29
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 08/04/21 08:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	0.03	J	ug/l	0.05	0.02	1
Anthracene	0.02	J	ug/l	0.10	0.01	1
Pyrene	0.18		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.12		ug/l	0.05	0.02	1
Chrysene	0.13		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.19		ug/l	0.05	0.01	1
Benzo(a)pyrene	0.11		ug/l	0.10	0.02	1
Benzo(ghi)perylene	0.13		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	67		15-120
4-Terphenyl-d14	96		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 08/05/21 19:04
Analyst: DV

Extraction Method: EPA 3546
Extraction Date: 08/04/21 03:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-15 Batch: WG1531206-1					
Naphthalene	ND		mg/kg	0.0066	0.0012
Fluorene	ND		mg/kg	0.0066	0.00080
Phenanthrene	ND		mg/kg	0.0066	0.00056
Anthracene	ND		mg/kg	0.0066	0.00053
Pyrene	ND		mg/kg	0.0066	0.00046
Benzo(a)anthracene	ND		mg/kg	0.0066	0.00063
Chrysene	ND		mg/kg	0.0066	0.00050
Benzo(b)fluoranthene	ND		mg/kg	0.0066	0.00063
Benzo(a)pyrene	ND		mg/kg	0.0066	0.00080
Benzo(ghi)perylene	ND		mg/kg	0.0066	0.00056

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	130	Q	25-120
Phenol-d6	147	Q	10-120
Nitrobenzene-d5	142	Q	23-120
2-Fluorobiphenyl	118		30-120
2,4,6-Tribromophenol	201	Q	10-136
4-Terphenyl-d14	152	Q	18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 08/04/21 14:56
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 08/04/21 04:40

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 16 Batch: WG1531233-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	73		21-120
Phenol-d6	64		10-120
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	86		15-120
2,4,6-Tribromophenol	86		10-120
4-Terphenyl-d14	89		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-15 Batch: WG1531206-2 WG1531206-3								
Naphthalene	61		57		40-140	7		50
Fluorene	62		57		40-140	8		50
Phenanthrene	60		55		40-140	9		50
Anthracene	64		59		40-140	8		50
Pyrene	62		57		35-142	8		50
Benzo(a)anthracene	64		58		40-140	10		50
Chrysene	56		52		40-140	7		50
Benzo(b)fluoranthene	62		55		40-140	12		50
Benzo(a)pyrene	66		60		40-140	10		50
Benzo(ghi)perylene	59		54		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	66		62		25-120
Phenol-d6	68		64		10-120
Nitrobenzene-d5	70		65		23-120
2-Fluorobiphenyl	61		57		30-120
2,4,6-Tribromophenol	70		64		10-136
4-Terphenyl-d14	63		59		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 16 Batch: WG1531233-2 WG1531233-3								
Naphthalene	79		76		40-140	4		40
Fluorene	83		80		40-140	4		40
Phenanthrene	82		77		40-140	6		40
Anthracene	84		78		40-140	7		40
Pyrene	85		77		26-127	10		40
Benzo(a)anthracene	78		74		40-140	5		40
Chrysene	83		78		40-140	6		40
Benzo(b)fluoranthene	85		79		40-140	7		40
Benzo(a)pyrene	88		81		40-140	8		40
Benzo(ghi)perylene	82		75		40-140	9		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	71		70		21-120
Phenol-d6	58		59		10-120
Nitrobenzene-d5	88		87		23-120
2-Fluorobiphenyl	81		80		15-120
2,4,6-Tribromophenol	88		84		10-120
4-Terphenyl-d14	91		85		41-149



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-01
 Client ID: PB882-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 08:40
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2141062**Project Number:** 200.00135.005.03**Report Date:** 08/11/21**SAMPLE RESULTS**

Lab ID: L2141062-02

Date Collected: 07/30/21 09:00

Client ID: PB882-17-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.4		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-03

Date Collected: 07/30/21 09:30

Client ID: PB882-19-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.6		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-04
 Client ID: PB882-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/30/21 10:30
 Date Received: 07/30/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2141062**Project Number:** 200.00135.005.03**Report Date:** 08/11/21**SAMPLE RESULTS**

Lab ID: L2141062-05

Date Collected: 07/30/21 11:10

Client ID: PB882-10-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-06

Date Collected: 07/30/21 11:20

Client ID: PB882-14-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-07

Date Collected: 07/30/21 11:30

Client ID: PB882-20-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2141062**Project Number:** 200.00135.005.03**Report Date:** 08/11/21**SAMPLE RESULTS**

Lab ID: L2141062-08

Date Collected: 07/30/21 11:40

Client ID: PB882-16-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.9		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-09

Date Collected: 07/30/21 13:00

Client ID: PB126-01-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2141062**Project Number:** 200.00135.005.03**Report Date:** 08/11/21**SAMPLE RESULTS**

Lab ID: L2141062-10

Date Collected: 07/30/21 13:35

Client ID: PB126-02-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.7		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-11

Date Collected: 07/30/21 14:05

Client ID: PB126-03-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2141062**Project Number:** 200.00135.005.03**Report Date:** 08/11/21**SAMPLE RESULTS**

Lab ID: L2141062-12

Date Collected: 07/30/21 14:15

Client ID: PB126-04-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-13

Date Collected: 07/30/21 14:20

Client ID: PB126-05-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.0		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2141062**Project Number:** 200.00135.005.03**Report Date:** 08/11/21**SAMPLE RESULTS**

Lab ID: L2141062-14

Date Collected: 07/30/21 14:30

Client ID: PB126-06-SS01

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.7		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

SAMPLE RESULTS

Lab ID: L2141062-15

Date Collected: 07/30/21 00:00

Client ID: DUP-17

Date Received: 07/30/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.1		%	0.100	NA	1	-	07/31/21 11:11	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2141062

Report Date: 08/11/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-15 QC Batch ID: WG1530109-1 QC Sample: L2141062-01 Client ID: PB882-15-SS01						
Solids, Total	81.3	81.3	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2141062**Project Number:** 200.00135.005.03**Report Date:** 08/11/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2141062-01A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2141062-01B	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-01C	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-01D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2141062-01E	Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		SUB-TOTAL LEAD()
L2141062-01F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-8270SIM(14)
L2141062-02A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2141062-02B	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-02C	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-02D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2141062-02E	Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		SUB-TOTAL LEAD()
L2141062-02F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-8270SIM(14)
L2141062-03A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2141062-03B	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-03C	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-03D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2141062-03E	Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		SUB-TOTAL LEAD()
L2141062-03F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-8270SIM(14)
L2141062-04A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2141062-04B	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-04C	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-04D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2141062**Project Number:** 200.00135.005.03**Report Date:** 08/11/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2141062-04E	Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		SUB-TOTAL LEAD()
L2141062-04F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-8270SIM(14)
L2141062-05A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2141062-05B	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-05C	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-05D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2141062-05E	Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		SUB-TOTAL LEAD()
L2141062-05F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-8270SIM(14)
L2141062-06A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2141062-06B	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-06C	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-06D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2141062-06E	Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		SUB-TOTAL LEAD()
L2141062-06F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-8270SIM(14)
L2141062-07A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2141062-07B	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-07C	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-07D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2141062-07E	Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		SUB-TOTAL LEAD()
L2141062-07F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-8270SIM(14)
L2141062-08A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2141062-08B	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-08C	Vial water preserved	A	NA		5.4	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-08D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2141062-08E	Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		SUB-TOTAL LEAD()
L2141062-08F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-8270SIM(14)
L2141062-09A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2141062-09B	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2141062-09C	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-09D	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2141062-09E	Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2141062-09F	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2141062-10A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2141062-10B	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-10C	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-10D	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2141062-10E	Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2141062-10F	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2141062-11A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2141062-11B	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-11C	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-11D	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2141062-11E	Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2141062-11F	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2141062-12A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2141062-12B	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-12C	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-12D	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2141062-12E	Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2141062-12F	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2141062-13A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2141062-13B	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-13C	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-13D	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2141062-13E	Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2141062-13F	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2141062**Project Number:** 200.00135.005.03**Report Date:** 08/11/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2141062-14A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2141062-14B	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-14C	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-14D	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2141062-14E	Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2141062-14F	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2141062-15A	Vial MeOH preserved	B	NA		3.2	Y	Absent		PA-8260HLW(14)
L2141062-15B	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-15C	Vial water preserved	B	NA		3.2	Y	Absent	31-JUL-21 05:20	PA-8260HLW(14)
L2141062-15D	Plastic 120ml unpreserved	B	NA		3.2	Y	Absent		TS(7)
L2141062-15E	Glass 60mL/2oz unpreserved	B	NA		3.2	Y	Absent		SUB-TOTAL LEAD()
L2141062-15F	Glass 120ml/4oz unpreserved	B	NA		3.2	Y	Absent		PA-8270SIM(14)
L2141062-16A	Vial HCl preserved	A	NA		5.4	Y	Absent		PA-8260(14)
L2141062-16B	Vial HCl preserved	A	NA		5.4	Y	Absent		PA-8260(14)
L2141062-16C	Vial HCl preserved	A	NA		5.4	Y	Absent		PA-8260(14)
L2141062-16D	Vial Na2S2O3 preserved	A	NA		5.4	Y	Absent		8011(14)
L2141062-16E	Vial Na2S2O3 preserved	A	NA		5.4	Y	Absent		8011(14)
L2141062-16F	Plastic 250ml HNO3 preserved	A	<2	<2	5.4	Y	Absent		SUB-TOTAL LEAD()
L2141062-16G	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		PA-8270SIM-LVI(7)
L2141062-16H	Amber 250ml unpreserved	A	7	7	5.4	Y	Absent		PA-8270SIM-LVI(7)
L2141062-17A	Vial HCl preserved	A	NA		5.4	Y	Absent		PA-8260(14)
L2141062-17B	Vial HCl preserved	A	NA		5.4	Y	Absent		PA-8260(14)
L2141062-17C	Vial Na2S2O3 preserved	A	NA		5.4	Y	Absent		8011(14)
L2141062-17D	Vial Na2S2O3 preserved	A	NA		5.4	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2141062
Report Date: 08/11/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.

Project Name: PHILADELPHIA REFINERY

Lab Number: L2141062

Project Number: 200.00135.005.03

Report Date: 08/11/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY PAGE 1 OF 2



Westborough, MA
 TEL: 508-898-9220
 FAX: 508-898-9193

Mansfield, MA
 TEL: 508-822-9300
 FAX: 508-822-3281

Project Information

Project Name: Philadelphia Refinery

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Fax: Standard Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/31/21

ALPHA Job #: L 2141062

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client Info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist
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PADEP Short List Analytical List:

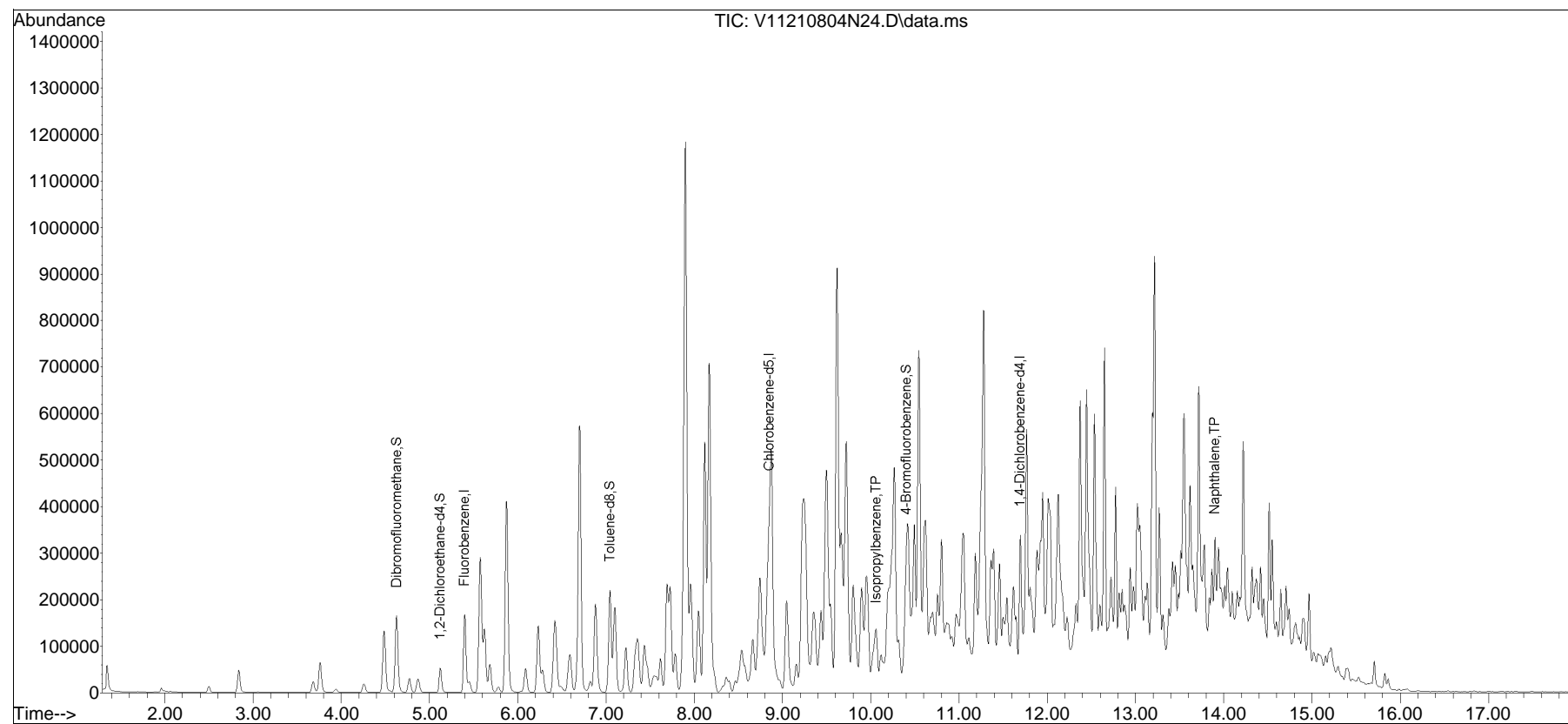
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
6. Waste Oil – benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, lead

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804N\
Data File : V11210804N24.D
Acq On : 05 Aug 2021 05:19 am
Operator : VOA111:JC
Sample : L2141062-05D,31H,6.66,5,0.025,,A
Misc : WG1531906,ICAL18049
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Aug 05 07:28:44 2021
Quant Method : I:\VOLATILES\VOA111\2021\210804N\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04N\V11210804N01.D•

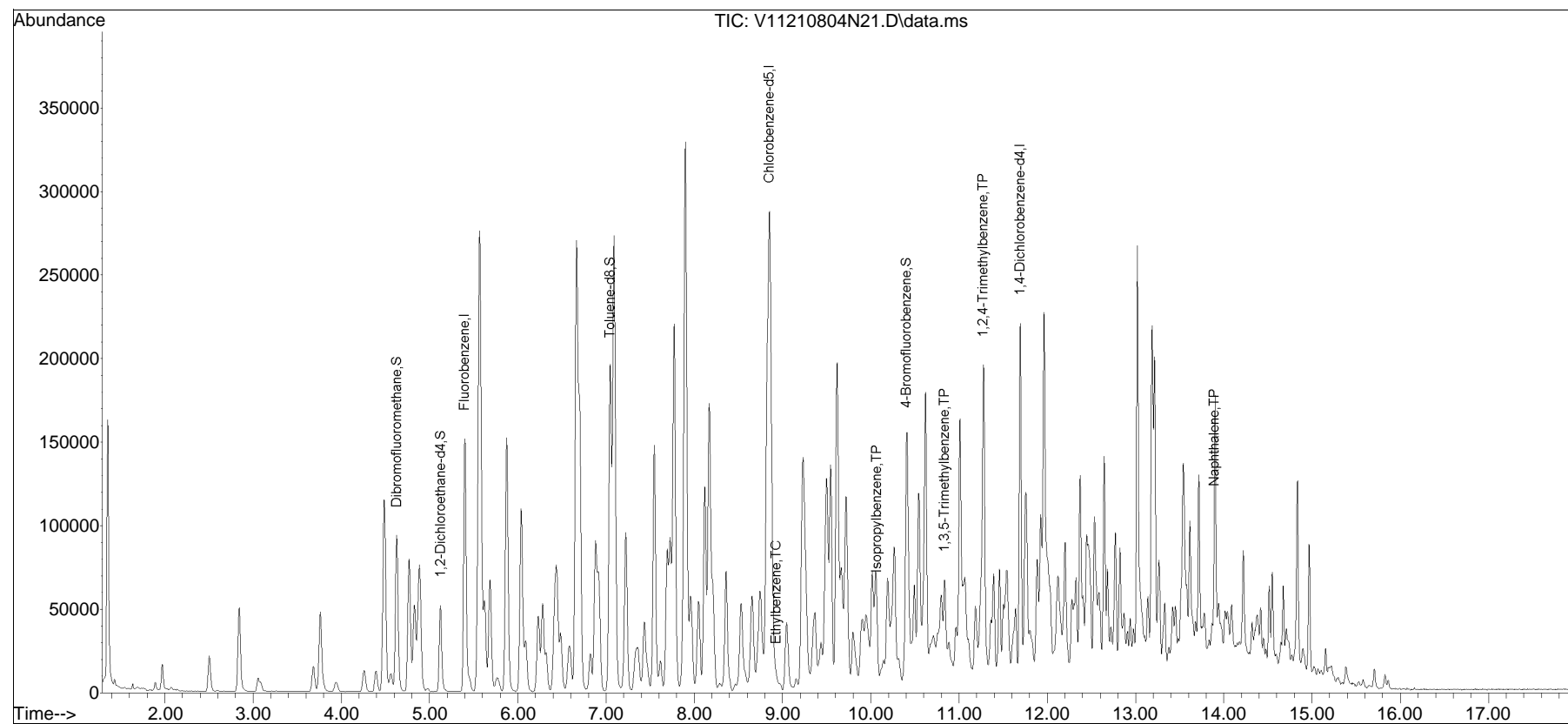


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804N\
Data File : V11210804N21.D
Acq On : 05 Aug 2021 04:04 am
Operator : VOA111:JC
Sample : L2141062-06,31,6.12,5,,B
Misc : WG1531904,ICAL18049
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Aug 05 06:27:54 2021
Quant Method : I:\VOLATILES\VOA111\2021\210804N\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04N\V11210804N01.D•

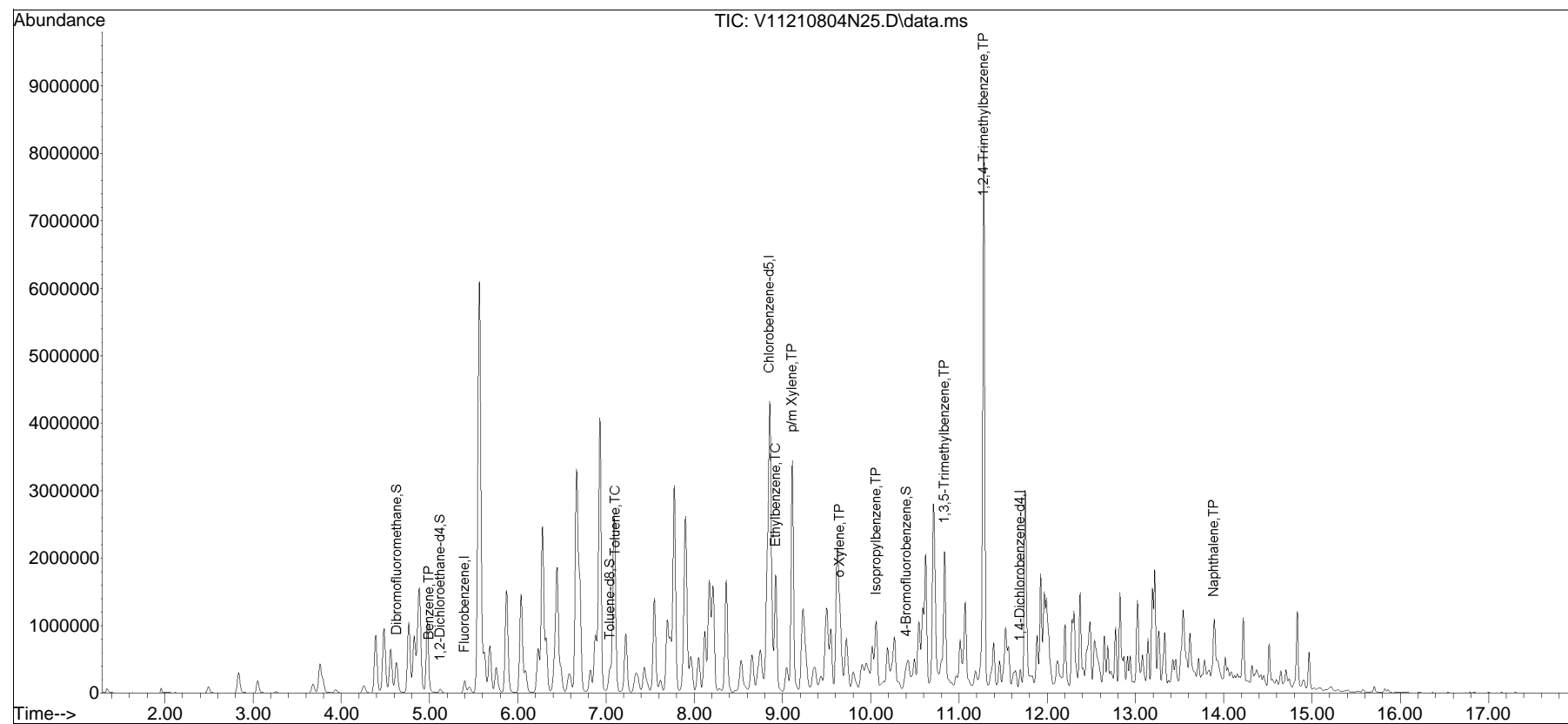


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804N\
Data File : V11210804N25.D
Acq On : 05 Aug 2021 05:45 am
Operator : VOA111:JC
Sample : L2141062-08D,31H,6.92,5,0.050,,A
Misc : WG1531906,ICAL18049
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Aug 05 06:28:10 2021
Quant Method : I:\VOLATILES\VOA111\2021\210804N\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04N\V11210804N01.D•

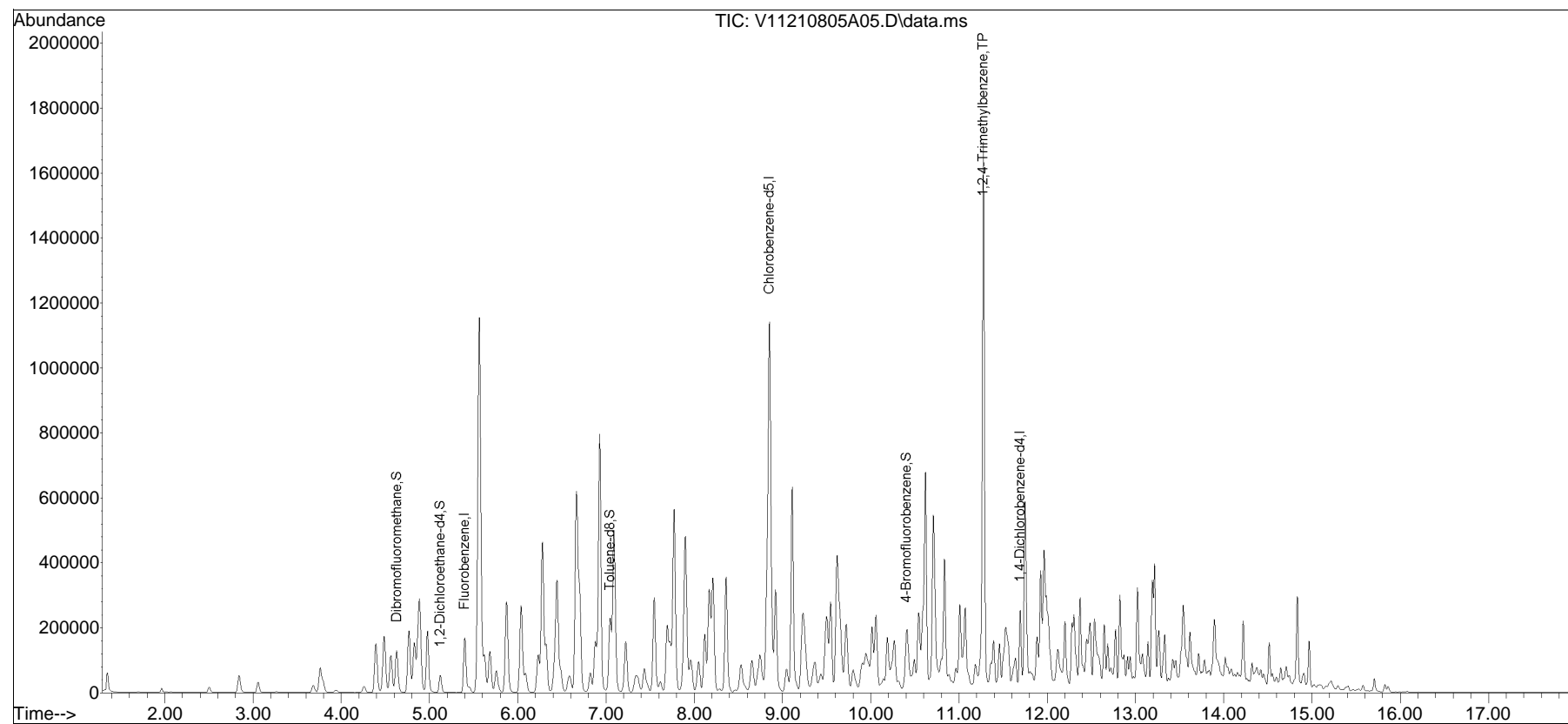


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210805A\
Data File : V11210805A05.D
Acq On : 05 Aug 2021 09:46 am
Operator : VOA111:AJK
Sample : L2141062-08D2,31H,6.92,5,0.010,,A
Misc : WG1531906,ICAL18049
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Aug 05 19:55:23 2021
Quant Method : I:\VOLATILES\VOA111\2021\210805A\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-1,2,4-TMB - 1,2,4-Trimethylbenzene only05A01.D•

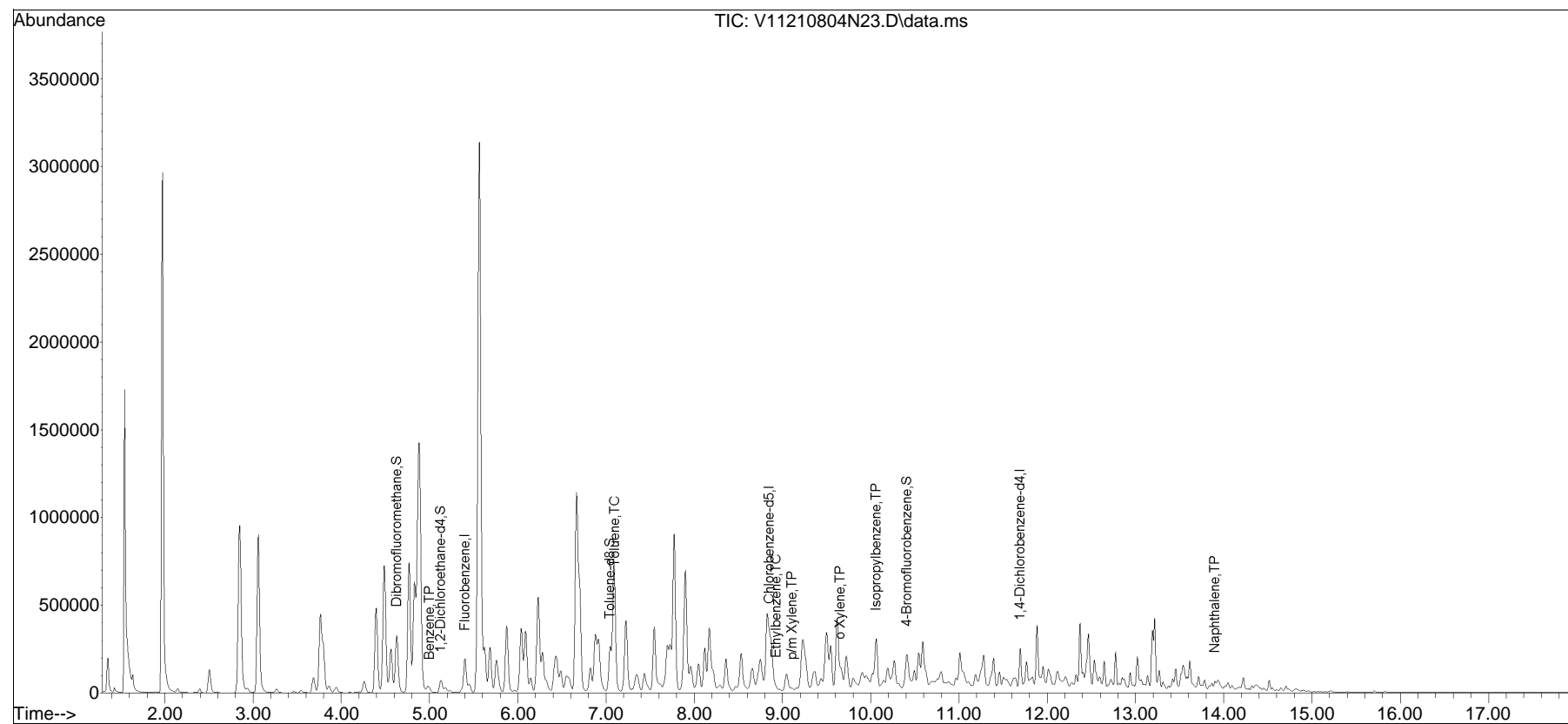


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210804N\
Data File : V11210804N23.D
Acq On : 05 Aug 2021 04:53 am
Operator : VOA111:JC
Sample : L2141062-09,31,6.15,5,,B
Misc : WG1531904,ICAL18049
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Aug 05 07:28:32 2021
Quant Method : I:\VOLATILES\VOA111\2021\210804N\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list04N\V11210804N01.D•

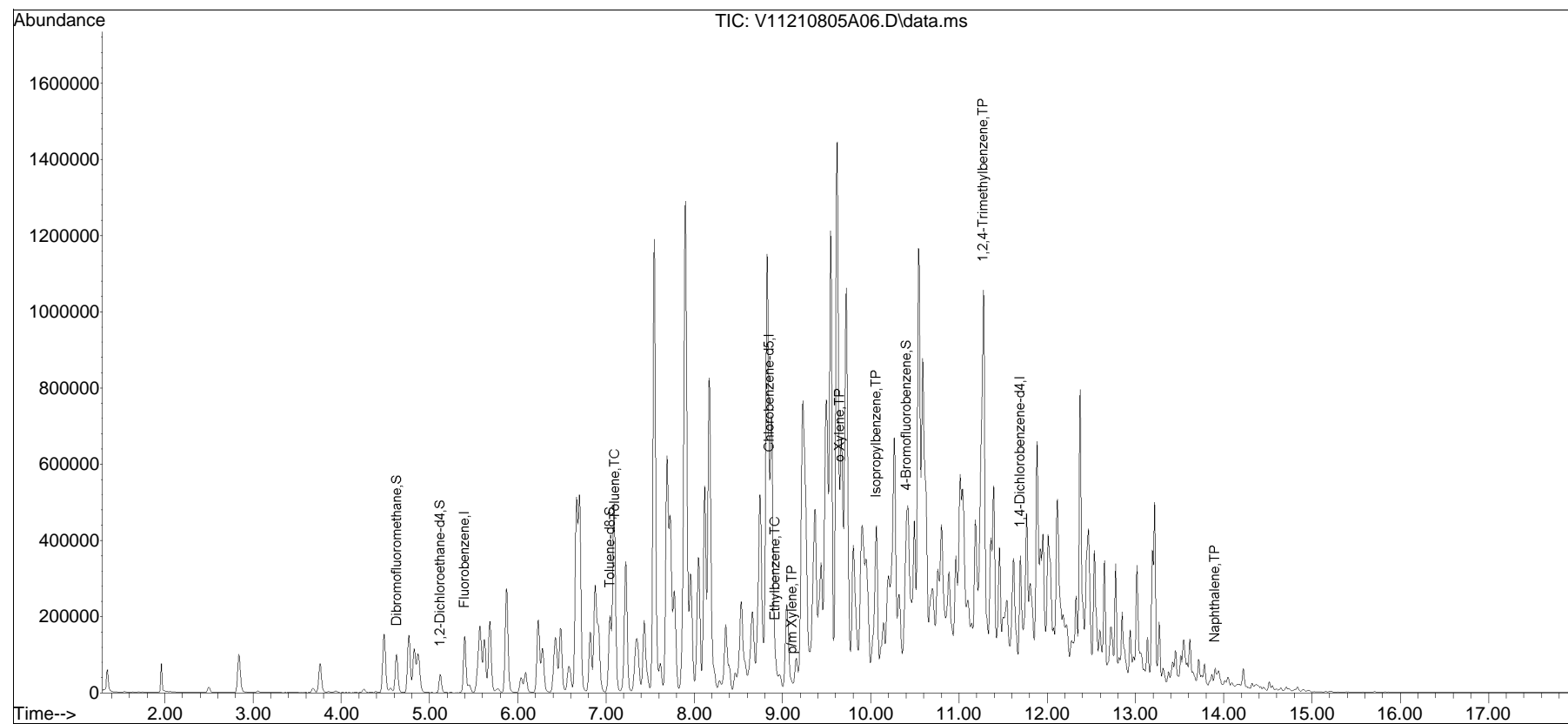


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210805A\
Data File : V11210805A06.D
Acq On : 05 Aug 2021 10:12 am
Operator : VOA111:AJK
Sample : L2141062-10D,31H,6.16,5,0.025,,A
Misc : WG1531906,ICAL18049
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Aug 05 19:59:43 2021
Quant Method : I:\VOLATILES\VOA111\2021\210805A\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list05A\V11210805A01.D•

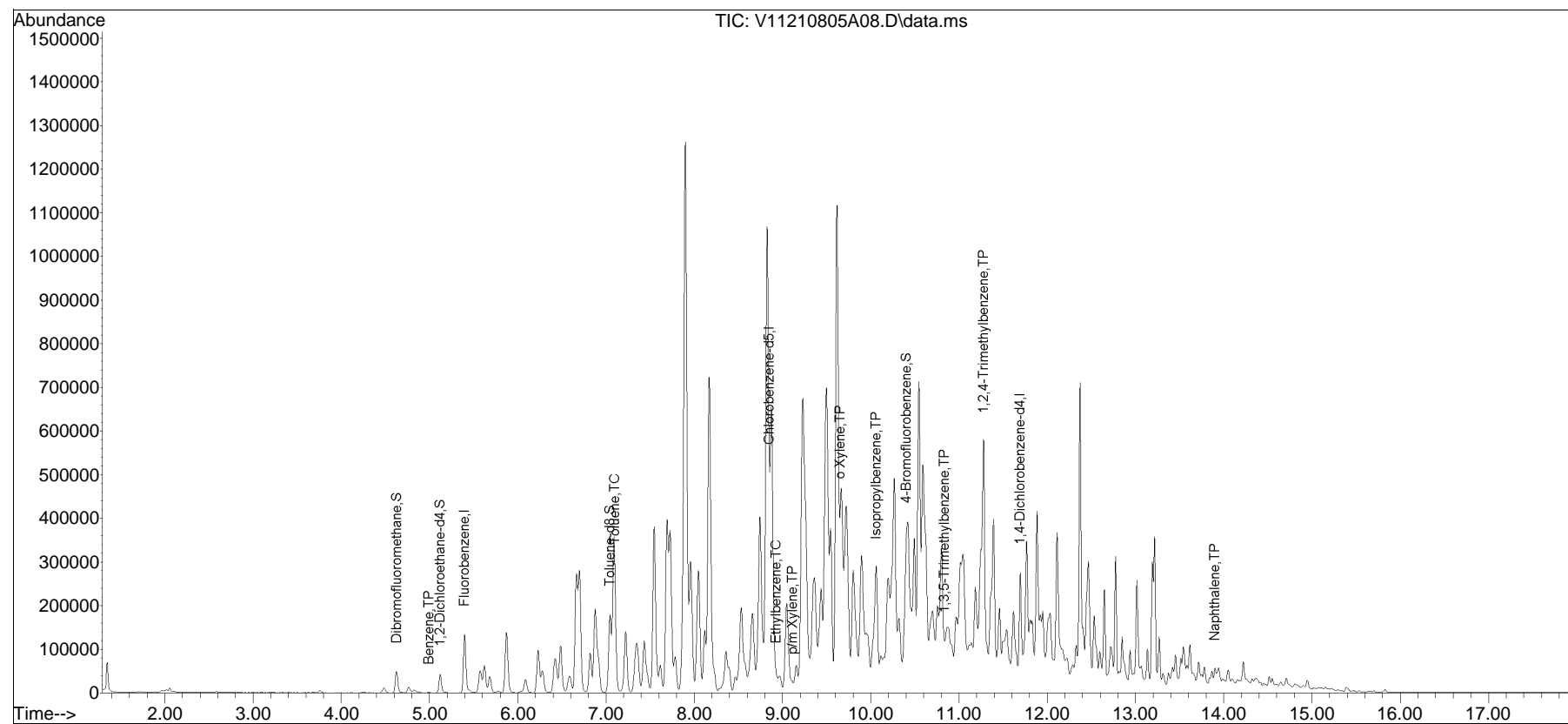


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210805A\
 Data File : V11210805A08.D
 Acq On : 05 Aug 2021 11:04 am
 Operator : VOA111:AJK
 Sample : L2141062-13D,31H,5.13,5,0.050,,A
 Misc : WG1531906,ICAL18049
 ALS Vial : 8 Sample Multiplier: 1

Quant Time: Aug 05 19:55:39 2021
 Quant Method : I:\VOLATILES\VOA111\2021\210805A\V111_210609A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Wed Jun 09 18:48:01 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list05A\V11210805A01.D•

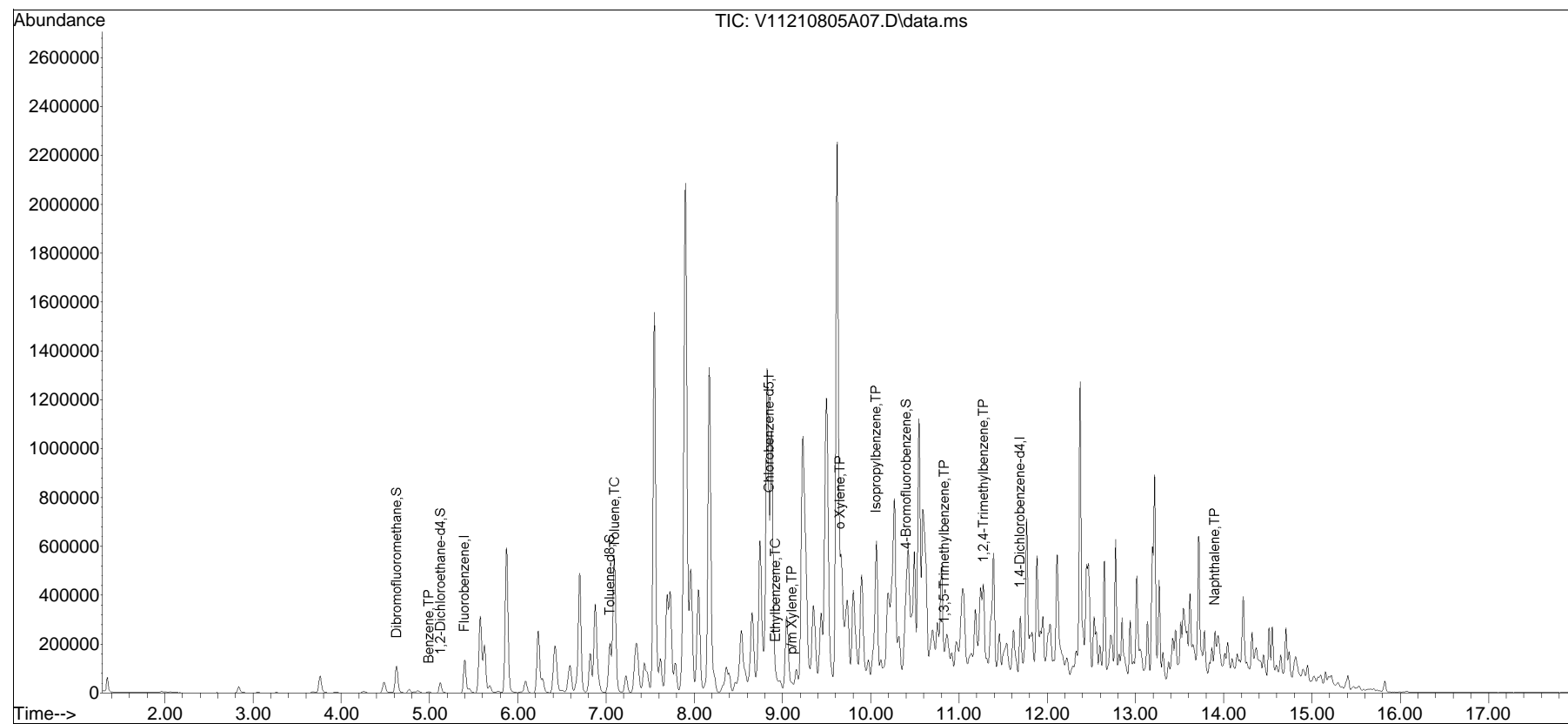


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\210805A\
Data File : V11210805A07.D
Acq On : 05 Aug 2021 10:38 am
Operator : VOA111:AJK
Sample : L2141062-14D,31H,2.83,5,0.025,,A
Misc : WG1531906,ICAL18049
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Aug 05 19:55:33 2021
Quant Method : I:\VOLATILES\VOA111\2021\210805A\V111_210609A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 09 18:48:01 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list05A\V11210805A01.D•





Dayton, NJ

08/10/21

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Alpha Analytical Laboratories, Inc.

Alpha Analytical, PA

L2141062

SGS Job Number: JD29267

Sampling Date: 07/30/21

Report to:

Alpha Analytical Laboratories, Inc.
Eight Walkup Drive
Westborough, MA 01581
subreports@alphalab.com; brao@alphalab.com

ATTN: Ben Rao

Total number of pages in report: **58**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.



Mike Earp

Client Service contact: Michelle Jenkins 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

SGS North America Inc. • 2235 Route 130 • Dayton, NJ 08810 • tel: 732-329-0200 • fax: 732-329-3499

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5

SGS North America Inc.

Sample Summary

Alpha Analytical Laboratories, Inc.

Job No: JD29267

Alpha Analytical, PA
Project No: L2141062

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JD29267-1	07/30/21	08:40	08/03/21	SO	Soil	PB882-15-SS01
JD29267-2	07/30/21	09:00	08/03/21	SO	Soil	PB882-17-SS01
JD29267-3	07/30/21	09:30	08/03/21	SO	Soil	PB882-19-SS01
JD29267-4	07/30/21	10:30	08/03/21	SO	Soil	PB882-18-SS01
JD29267-5	07/30/21	11:10	08/03/21	SO	Soil	PB882-10-SS01
JD29267-6	07/30/21	11:20	08/03/21	SO	Soil	PB882-14-SS01
JD29267-7	07/30/21	11:30	08/03/21	SO	Soil	PB882-20-SS01
JD29267-8	07/30/21	11:40	08/03/21	SO	Soil	PB882-16-SS01
JD29267-9	07/30/21	13:00	08/03/21	SO	Soil	PB126-01-SS01
JD29267-10	07/30/21	13:35	08/03/21	SO	Soil	PB126-02-SS01
JD29267-11	07/30/21	14:05	08/03/21	SO	Soil	PB126-03-SS01
JD29267-12	07/30/21	14:15	08/03/21	SO	Soil	PB126-04-SS01
JD29267-13	07/30/21	14:20	08/03/21	SO	Soil	PB126-05-SS01

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

SGS North America Inc.

Sample Summary

(continued)

Alpha Analytical Laboratories, Inc.

Job No: JD29267Alpha Analytical, PA
Project No: L2141062

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JD29267-14	07/30/21	14:30	08/03/21	SO	Soil	PB126-06-SS01
JD29267-15	07/30/21	00:00	08/03/21	SO	Soil	DUP-17
JD29267-16	07/30/21	15:00	08/03/21	AQ	Field Blank Soil	FB-210730

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

Summary of Hits

Job Number: JD29267
Account: Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA
Collected: 07/30/21

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD29267-1	PB882-15-SS01					
Lead		19.4	2.5		mg/kg	SW846 6010D
JD29267-2	PB882-17-SS01					
Lead		3.9	2.3		mg/kg	SW846 6010D
JD29267-3	PB882-19-SS01					
Lead		10.0	2.6		mg/kg	SW846 6010D
JD29267-4	PB882-18-SS01					
Lead		11.3	2.4		mg/kg	SW846 6010D
JD29267-5	PB882-10-SS01					
No hits reported in this sample.						
JD29267-6	PB882-14-SS01					
Lead		7.0	2.5		mg/kg	SW846 6010D
JD29267-7	PB882-20-SS01					
Lead		73.6	2.5		mg/kg	SW846 6010D
JD29267-8	PB882-16-SS01					
Lead		11.3	2.3		mg/kg	SW846 6010D
JD29267-9	PB126-01-SS01					
Lead		7.9	1.6		mg/kg	SW846 6010D
JD29267-10	PB126-02-SS01					
Lead		9.4	2.4		mg/kg	SW846 6010D
JD29267-11	PB126-03-SS01					
Lead		7.4	2.4		mg/kg	SW846 6010D

Summary of Hits

Job Number: JD29267
Account: Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA
Collected: 07/30/21

Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD29267-12	PB126-04-SS01					
Lead		15.8	2.5		mg/kg	SW846 6010D
JD29267-13	PB126-05-SS01					
Lead		1040	2.7		mg/kg	SW846 6010D
JD29267-14	PB126-06-SS01					
Lead		156	2.4		mg/kg	SW846 6010D
JD29267-15	DUP-17					
Lead		148	2.5		mg/kg	SW846 6010D
JD29267-16	FB-210730					

No hits reported in this sample.



Dayton, NJ

Section 3



Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB882-15-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-1	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 81.3
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	19.4	2.5	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB882-17-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-2	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 90.4
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	3.9	2.3	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB882-19-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-3	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 79.6
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	10.0	2.6	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

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3

Client Sample ID: PB882-18-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-4	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 82.1
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	11.3	2.4	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB882-10-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-5	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 89.6
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead ^a	<12	12	mg/kg	5	08/06/21	08/09/21	ND	SW846 6010D ¹ SW846 3050B ²

(1) Instrument QC Batch: MA50959

(2) Prep QC Batch: MP27913

(a) Elevated detection limit due to dilution required for high interfering element.

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB882-14-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-6	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 81.5
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	7.0	2.5	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB882-20-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-7	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 82.6
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	73.6	2.5	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB882-16-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-8	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 85.9
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	11.3	2.3	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

Client Sample ID: PB126-01-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-9	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 82.5
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	7.9	1.6	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

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3.10
3

Client Sample ID: PB126-02-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-10	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 82.7
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	9.4	2.4	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

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3.11
3

Client Sample ID:	PB126-03-SS01	Date Sampled:	07/30/21
Lab Sample ID:	JD29267-11	Date Received:	08/03/21
Matrix:	SO - Soil	Percent Solids:	82.5
Project:	Alpha Analytical, PA		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	7.4	2.4	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

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3.12
3

Client Sample ID: PB126-04-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-12	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 83.5
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	15.8	2.5	mg/kg	1	08/06/21	08/06/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50949

(2) Prep QC Batch: MP27913

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

3.13
3

Client Sample ID: PB126-05-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-13	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 77.0
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	1040	2.7	mg/kg	1	08/09/21	08/10/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50958

(2) Prep QC Batch: MP27946

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

3.14

3

Client Sample ID: PB126-06-SS01	Date Sampled: 07/30/21
Lab Sample ID: JD29267-14	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 84.7
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	156	2.4	mg/kg	1	08/09/21	08/10/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50958

(2) Prep QC Batch: MP27946

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

3.15
3

Client Sample ID: DUP-17	Date Sampled: 07/30/21
Lab Sample ID: JD29267-15	Date Received: 08/03/21
Matrix: SO - Soil	Percent Solids: 81.1
Project: Alpha Analytical, PA	

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	148	2.5	mg/kg	1	08/09/21	08/10/21 ND	SW846 6010D ¹	SW846 3050B ²

(1) Instrument QC Batch: MA50958

(2) Prep QC Batch: MP27946

RL = Reporting Limit

SGS North America Inc.

Report of Analysis

Page 1 of 1

3.16

3

Client Sample ID: FB-210730	Date Sampled: 07/30/21
Lab Sample ID: JD29267-16	Date Received: 08/03/21
Matrix: AQ - Field Blank Soil	Percent Solids: n/a
Project: Alpha Analytical, PA	

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead	<3.0	3.0	ug/l	1	08/05/21	08/05/21 ND	SW846 6010D ¹	SW846 3010A ²

(1) Instrument QC Batch: MA50946

(2) Prep QC Batch: MP27879

RL = Reporting Limit



Dayton, NJ

Section 4

4


Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody


09/16/2

		Subcontract Chain of Custody 535 North Attle 2275, Attleboro Dorton, MA 01930		JD29267 Alpha Job Number L2141062	
Client: Alpha Analytical Labs Address: Dept Working Table Westborough, MA 01581-1012 Phone: 201 612 2631 Email: b.200@alphalabs.com		Project Location: PA Project Manager: Ben Rao Date: 09/16/2012		State/Territory Program Regulatory Criteria	
Reference following Alpha Job Number on final report deliverables: L2141062					
Address: Comments: Send all results reports to: subreport@alphalabs.com					
LAB ID	CLIENT	Collection Date/Time	Sample Matrix	Analysis	Date/Time
1	PA0002-16-2501	07-20-11 09:47	SW	Top Lead	8/1
2	PA0002-16-2501	07-20-11 09:00	SW	Top Lead	7/2
3	PA0002-16-2501	07-20-11 08:30	SW	Top Lead	
4	PA0002-16-2501	07-20-11 08:30	SW	Top Lead	
5	PA0002-16-2501	07-20-11 11:17	SW	Top Lead	4/16
6	PA0002-16-2501	07-20-11 11:20	SW	Top Lead	
7	PA0002-16-2501	07-20-11 11:22	SW	Top Lead	
8	PA0002-16-2501	07-20-11 11:47	SW	Top Lead	
9	PA0002-16-2501	07-20-11 12:00	SW	Top Lead	
Released By: <i>Paul Maggella</i>			Date/Time: <i>8/16/12</i>	Received By: <i>Paul Maggella</i>	Date/Time: <i>8/16/12</i>
Form No: 01_subrnr					

30.9.0



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		Subcontract Chain of Custody 8015 North America 2235 US-110 Dayton, NJ 05410		702.93 67 Alpha Job Number L2141062	
Client: Alpha Analytical Labs Address: Eight Walkup Drive Westborough, MA 01581-0019 Phone: 501 812 2542 Email: jmag@alphaanalytical.com		Project Location: PA Project Manager: Ben Rao Date: 01/21/2016		State/Federal Program: Regulatory Criteria	
Reference following Alpha Job Number on Test reports/Makefiles: L2141062		Report include Method 9 and LC5/LC53			
Additional Comments: Send all results reports to 6026607@alphaanalytical.com					
Job ID	Client ID	Collection Date/Time	Sample Matrix	Analysis	Batch #
13	PA130-05-550	01-20-2016 13:25	SL	Total Lead	
14	PA130-05-550	01-20-2016 14:00	SL	Total Lead	
15	PA130-05-550	01-20-2016 14:15	SL	Total Lead	
16	PA130-05-550	01-20-2016 14:30	SL	Total Lead	
17	PA130-05-550	01-20-2016 14:45	SL	Total Lead	
18	PA130-05-550	01-20-2016 15:00	SL	Total Lead	
19	PA130-05-550	01-20-2016 15:15	Water	Total Lead	
Relinquished By:		Date/Time:	Received By:	Date/Time:	
<i>Ben L. Datta</i>		01/21/2016	<i>Paul Maggella</i>	01/21/2016	
<i>Paul Maggella</i>		01/21/2016	<i>Paul Maggella</i>	01/21/2016	

4.1
4

JD29267: Chain of Custody

Page 2 of 3



SGS Sample Receipt Summary

Job Number: JD29267

Client: ALPHA ANALYTICAL

Project: L2141062

Date / Time Received: 8/3/2021 8:20:00 AM

Delivery Method:

Airbill #'s:

Cooler Temps (Raw Measured) °C: Cooler 1: (3.0); Cooler 2: (4.0);

Cooler Temps (Corrected) °C: Cooler 1: (3.0); Cooler 2: (4.0);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	_____	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	2	

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y or N</u>	
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y or N</u>	
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact	

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 212820	pH 12+: 203117A	Other: (Specify) _____
--------------------	-----------------	-----------------	------------------------

Comments

SM089-03
Rev. Date 12/7/17

JD29267: Chain of Custody

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4.1
4



Dayton, NJ

Section 5

Metals Analysis

5

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27879
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/05/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	17	46		
Antimony	6.0	1.7	4.7		
Arsenic	3.0	1.3	2.8		
Barium	200	.8	13		
Beryllium	1.0	.2	.5		
Bismuth	20	2.1	4		
Boron	100	1	63		
Cadmium	3.0	.2	1		
Calcium	5000	6.6	99		
Cerium	100				
Chromium	10	.3	2		
Cobalt	50	.4	2.6		
Copper	10	.8	5.9		
Iron	100	5.3	32		
Lead	3.0	1.1	1.8	0.30	<3.0
Lithium	50	3.7	7.3		
Magnesium	5000	32	140		
Manganese	15	.1	1.4		
Molybdenum	20	.5	3.6		
Nickel	10	.3	1.7		
Phosphorus	50	1.2	18		
Potassium	10000	77	200		
Selenium	10	2	4.9		
Silicon	200	1.3	100		
Silver	10	.9	1.9		
Sodium	10000	23	570		
Strontium	10	.3	1		
Sulfur	50	3	45		
Thallium	10	1.8	1.8		
Tin	10	.8	3.7		
Titanium	10	.5	2.5		
Tungsten	50	2	40		
Vanadium	50	.6	1.8		

5.1.1
5

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27879
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/05/21

Metal	RL	IDL	MDL	MB raw	final
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Zinc	20	.1	6.9		
Zirconium	10	.3	4.1		

Associated samples MP27879: JD29267-16

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.1.1
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27879
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/05/21

Metal	JD29310-7 Original MS	SpikeLot MPSPK2		QC % Rec	QC Limits
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron					
Cadmium	anr				
Calcium	anr				
Cerium					
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron	anr				
Lead	0.0	1990	2000	99.5	75-125
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium	anr				
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	anr				

5.1.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27879
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/05/21

Metal	JD29310-7 Original MS	SpikeLot MPSPK2	% Rec	QC Limits
-------	--------------------------	--------------------	-------	--------------

Zinc anr

Zirconium

Associated samples MP27879: JD29267-16

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27879
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/05/21

Metal	JD29310-7 Original MSD	SpikeLot MPSPK2 % Rec		MSD RPD	QC Limit
Aluminum	anr				
Antimony	anr				
Arsenic	anr				
Barium	anr				
Beryllium	anr				
Bismuth					
Boron					
Cadmium	anr				
Calcium	anr				
Cerium					
Chromium	anr				
Cobalt	anr				
Copper	anr				
Iron	anr				
Lead	0.0	2010	2000	100.5	1.0 20
Lithium					
Magnesium	anr				
Manganese	anr				
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium	anr				
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Sulfur					
Thallium	anr				
Tin					
Titanium					
Tungsten					
Vanadium	anr				

5.1.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27879
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/05/21

Metal	JD29310-7 Original MSD	Spikelet MPSPK2	% Rec	MSD RPD	QC Limit
-------	---------------------------	--------------------	-------	------------	-------------

Zinc anr

Zirconium

Associated samples MP27879: JD29267-16

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested

5.1.2
5

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27879
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/05/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Cerium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	2050	2000	102.5	80-120
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			

5.1.3
5

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27879
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/05/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
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Zinc anr

Zirconium

Associated samples MP27879: JD29267-16

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.1.3
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27879
 Matrix Type: AQUEOUS

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/05/21

Metal	JD29310-7 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	anr			
Arsenic	anr			
Barium	anr			
Beryllium	anr			
Bismuth				
Boron				
Cadmium	anr			
Calcium	anr			
Cerium				
Chromium	anr			
Cobalt	anr			
Copper	anr			
Iron	anr			
Lead	0.00	0.00	NC	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium	anr			
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Sulfur				
Thallium	anr			
Tin				
Titanium				
Tungsten				
Vanadium	anr			

5.1.4
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27879
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/05/21

Metal	JD29310-7 Original SDL 1:5	%DIF	QC Limits
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Zinc anr

Zirconium

Associated samples MP27879: JD29267-16

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.1.4
5

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27913
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/06/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.7	8.1		
Antimony	2.0	.22	.41		
Arsenic	2.0	.13	.28		
Barium	20	.1	1.9		
Beryllium	0.20	.02	.08		
Bismuth	2.0	.21	.52		
Boron	10	.1	1.5		
Cadmium	0.50	.02	.07		
Calcium	500	.77	44		
Chromium	1.0	.05	.37		
Cobalt	5.0	.04	.28		
Copper	2.5	.68	.84		
Iron	50	1.5	19		
Lead	2.0	.16	.41	0.010	<2.0
Lithium	5.0	.37	.92		
Magnesium	500	5.4	14		
Manganese	1.5	.01	.41		
Molybdenum	2.0	.05	.32		
Nickel	4.0	.03	.35		
Phosphorus	20	.18	3.3		
Potassium	1000	7.7	32		
Selenium	2.0	.2	.65		
Silicon	20	.13	11		
Silver	0.50	.09	.17		
Sodium	1000	2.3	78		
Strontium	5.0	.04	.18		
Sulfur	10	.41	9.4		
Thallium	1.0	.16	.58		
Tin	20	.09	3.8		
Titanium	1.0	.09	.34		
Tungsten	5.0	.2	1.8		
Vanadium	5.0	.08	.19		
Zinc	5.0	.02	2.3		

5.2.1
5

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27913
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/06/21

Metal	RL	IDL	MDL	MB raw	final
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Zirconium 2.0 .05 .23

Associated samples MP27913: JD29267-1, JD29267-2, JD29267-3, JD29267-4, JD29267-5, JD29267-6, JD29267-7, JD29267-8, JD29267-9, JD29267-10, JD29267-11, JD29267-12

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.2.1
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27913
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/06/21

Metal	JD29267-6		SpikeLot		QC	
	Original MS		MPSPK2	% Rec	Limits	
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Bismuth						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Lead	7.0	281	245	111.7	75-125	
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Strontium						
Sulfur						
Thallium						
Tin						
Titanium						
Tungsten						
Vanadium						
Zinc						
Zirconium						

5.2.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27913
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/06/21

Metal	JD29267-6 Original MS	SpikeLot MPSPK2	% Rec	QC Limits
-------	--------------------------	--------------------	-------	--------------

Associated samples MP27913: JD29267-1, JD29267-2, JD29267-3, JD29267-4, JD29267-5, JD29267-6, JD29267-7, JD29267-8, JD29267-9, JD29267-10, JD29267-11, JD29267-12

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

5.2.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27913
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/06/21

Metal	JD29267-6 Original MSD	SpikeLot MPSPK2	% Rec	MSD RPD	QC Limit
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Bismuth					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Lead	7.0	275	250	107.0	2.2 20
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Strontium					
Sulfur					
Thallium					
Tin					
Titanium					
Tungsten					
Vanadium					
Zinc					
Zirconium					

5.2.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27913
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/06/21

Metal	JD29267-6 Original MSD	SpikeLot MPSPK2	% Rec	MSD RPD	QC Limit
-------	---------------------------	--------------------	-------	------------	-------------

Associated samples MP27913: JD29267-1, JD29267-2, JD29267-3, JD29267-4, JD29267-5, JD29267-6, JD29267-7, JD29267-8, JD29267-9, JD29267-10, JD29267-11, JD29267-12

Results < IDL are shown as zero for calculation purposes

- (*) Outside of QC limits
- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested

5.2.2
5

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27913
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/06/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	228	200	114.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

5.2.3
5

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27913
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/06/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
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Zirconium

Associated samples MP27913: JD29267-1, JD29267-2, JD29267-3, JD29267-4, JD29267-5, JD29267-6, JD29267-7, JD29267-8, JD29267-9, JD29267-10, JD29267-11, JD29267-12

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

5.2.3
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27913
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/06/21

Metal	JD29267-6 Original SDL 1:5	%DIF	QC Limits
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Aluminum			
Antimony			
Arsenic	anr		
Barium			
Beryllium			
Bismuth			
Boron			
Cadmium			
Calcium			
Chromium			
Cobalt			
Copper			
Iron			
Lead	55.0	57.9	5.3 0-10
Lithium			
Magnesium			
Manganese			
Molybdenum			
Nickel			
Phosphorus			
Potassium			
Selenium			
Silicon			
Silver			
Sodium			
Strontium			
Sulfur			
Thallium			
Tin			
Titanium			
Tungsten			
Vanadium			
Zinc			

5.2.4
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27913
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/06/21

	JD29267-6	QC
Metal	Original SDL 1:5 %DIF	Limits

Zirconium

Associated samples MP27913: JD29267-1, JD29267-2, JD29267-3, JD29267-4, JD29267-5, JD29267-6, JD29267-7, JD29267-8, JD29267-9, JD29267-10, JD29267-11, JD29267-12

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.2.4
5

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27946
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/09/21

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.6	8.1		
Antimony	2.0	.25	.41		
Arsenic	2.0	.2	.28		
Barium	20	.04	1.9		
Beryllium	0.20	.01	.08		
Bismuth	2.0	.36	.52		
Boron	10	.19	1.5		
Cadmium	0.50	.04	.07		
Calcium	500	.56	44		
Chromium	1.0	.05	.37		
Cobalt	5.0	.05	.28		
Copper	2.5	.1	.84		
Iron	50	1.1	19		
Lead	2.0	.12	.41	0.030	<2.0
Lithium	5.0	.23	.92		
Magnesium	500	6.5	14		
Manganese	1.5	.02	.41		
Molybdenum	2.0	.04	.32		
Nickel	4.0	.03	.35		
Phosphorus	20	.41	3.3		
Potassium	1000	5.5	32		
Selenium	2.0	.35	.65		
Silicon	20	.16	11		
Silver	0.50	.11	.17		
Sodium	1000	1.1	78		
Strontium	5.0	.01	.18		
Sulfur	10	.44	9.4		
Thallium	1.0	.25	.58		
Tin	20	.1	3.8		
Titanium	1.0	.04	.34		
Tungsten	5.0	.28	1.8		
Vanadium	5.0	.06	.19		
Zinc	5.0	.01	2.3		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27946
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/09/21

Metal	RL	IDL	MDL	MB raw	final
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Zirconium 2.0 .04 .23

Associated samples MP27946: JD29267-13, JD29267-14, JD29267-15

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.3.1
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27946
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/09/21

Metal	JD29323-8 Original MS	SpikeLot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	4.1	189	212	87.1 75-125
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

5.3.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27946
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/09/21

Metal	JD29323-8 Original MS	Spikelet MPSPK2	% Rec	QC Limits
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Zirconium

Associated samples MP27946: JD29267-13, JD29267-14, JD29267-15

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

5.3.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27946
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/09/21

Metal	JD29323-8 Original MSD	Spike lot	MSD RPD	QC Limit
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	4.1	187	214	85.3
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

5.3.2
5

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27946
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/09/21

Metal	JD29323-8 Original MSD	SpikeLot MPSPK2	% Rec	MSD RPD	QC Limit
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Zirconium

Associated samples MP27946: JD29267-13, JD29267-14, JD29267-15

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

5.3.2
5

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27946
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: mg/kg

Prep Date: 08/09/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	209	198	105.5	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

5.3.3
5

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27946
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 08/09/21

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
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Zirconium

Associated samples MP27946: JD29267-13, JD29267-14, JD29267-15

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.3.3
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29267
 Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
 Project: Alpha Analytical, PA

QC Batch ID: MP27946
 Matrix Type: SOLID

Methods: SW846 6010D
 Units: ug/l

Prep Date: 08/09/21

Metal	JD29323-8	QC
	Original SDL 1:5	%DIF Limits

Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Bismuth				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	39.4	40.2	2.0	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Sulfur				
Thallium				
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc				

5.3.4
5

SERIAL DILUTION RESULTS SUMMARY

Login Number: JD29267
Account: ALPHAMAW - Alpha Analytical Laboratories, Inc.
Project: Alpha Analytical, PA

QC Batch ID: MP27946
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 08/09/21

Metal	JD29323-8	QC
	Original SDL 1:5 %DIF	Limits

Zirconium

Associated samples MP27946: JD29267-13, JD29267-14, JD29267-15

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

5.3.4
5



ANALYTICAL REPORT

Lab Number:	L2154810
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	10/21/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2154810

Report Date: 10/21/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2154810-01	PB-886-01-SS01	SOIL	PHILADELPHIA, PA	10/07/21 08:40	10/07/21
L2154810-02	PB-886-02-SS01	SOIL	PHILADELPHIA, PA	10/07/21 08:50	10/07/21
L2154810-03	PB-886-03-SS01	SOIL	PHILADELPHIA, PA	10/07/21 09:20	10/07/21
L2154810-04	PB-886-04-SS01	SOIL	PHILADELPHIA, PA	10/07/21 09:40	10/07/21
L2154810-05	PB-886-05-SS01	SOIL	PHILADELPHIA, PA	10/07/21 10:10	10/07/21
L2154810-06	PB-886-08-SS01	SOIL	PHILADELPHIA, PA	10/07/21 11:10	10/07/21
L2154810-07	PB-886-09-SS01	SOIL	PHILADELPHIA, PA	10/07/21 11:30	10/07/21
L2154810-08	PB-886-11-SS01	SOIL	PHILADELPHIA, PA	10/07/21 11:35	10/07/21
L2154810-09	PB-886-12-SS01	SOIL	PHILADELPHIA, PA	10/07/21 11:45	10/07/21
L2154810-10	PB-886-18-SS01	SOIL	PHILADELPHIA, PA	10/07/21 13:20	10/07/21
L2154810-11	PB-886-24-SS01	SOIL	PHILADELPHIA, PA	10/07/21 13:30	10/07/21
L2154810-12	PB-886-26-SS01	SOIL	PHILADELPHIA, PA	10/07/21 13:40	10/07/21
L2154810-13	PB-886-27-SS01	SOIL	PHILADELPHIA, PA	10/07/21 13:50	10/07/21
L2154810-14	DUP-21	SOIL	PHILADELPHIA, PA	10/07/21 00:00	10/07/21
L2154810-15	FB-211007	WATER	PHILADELPHIA, PA	10/07/21 12:00	10/07/21
L2154810-16	TB-211007	WATER	PHILADELPHIA, PA	10/07/21 00:00	10/07/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Case Narrative (continued)

Report Submission

October 21, 2021: This final report includes the results of all requested analyses.

October 15, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The project number was logged per project history.

L2154810-12: The collection date and time on the chain of custody was 07-OCT-21 13:40; however, the collection date/time on the container label was 07-OCT-21 13:50. At the client's request, the collection date/time is reported as 07-OCT-21 13:40.

L2154810-13: The collection date and time on the chain of custody was 07-OCT-21 13:50; however, the collection date/time on the container label was 07-OCT-21 13:40. At the client's request, the collection date/time is reported as 07-OCT-21 13:50.

Volatile Organics

L2154810-06: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2154810-06: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2154810-12: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (277%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2154810-13: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

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Case Narrative (continued)

that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies. Further re-analysis could not be performed due to the existing vials being compromised. L2154810-14: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (150%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

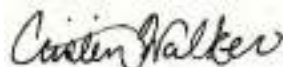
Total Metals

L2154810-05: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

The WG1556309-3 MS recovery, performed on L2154810-01, is outside the acceptance criteria for lead (74%). A post digestion spike was performed and yielded unacceptable recoveries for lead (71%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 10/21/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-01
 Client ID: PB-886-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 08:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 15:29
 Analyst: AJK
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-02
 Client ID: PB-886-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 08:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 22:25
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-03
 Client ID: PB-886-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:20
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 22:46
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-04
 Client ID: PB-886-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 23:06
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	0.00014	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.00018	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-05
 Client ID: PB-886-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 10:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 23:27
 Analyst: JC
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00084	0.00022	1
Toluene	ND		mg/kg	0.00084	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	ND		mg/kg	0.00084	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00084	0.00024	1
Xylenes, Total	ND		mg/kg	0.00084	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00084	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-06
 Client ID: PB-886-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 02:10
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.15	0.015	1
Benzene	ND		mg/kg	0.038	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.075	0.019	1
Toluene	ND		mg/kg	0.075	0.041	1
1,2-Dibromoethane	ND		mg/kg	0.038	0.022	1
Ethylbenzene	ND		mg/kg	0.075	0.011	1
p/m-Xylene	ND		mg/kg	0.15	0.042	1
o-Xylene	ND		mg/kg	0.075	0.022	1
Xylenes, Total	ND		mg/kg	0.075	0.022	1
Isopropylbenzene	0.015	J	mg/kg	0.075	0.0082	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.15	0.014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.15	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-07
 Client ID: PB-886-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 23:47
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-08
 Client ID: PB-886-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:35
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 00:07
 Analyst: JC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-09
 Client ID: PB-886-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:45
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 01:29
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00078	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00080	1
o-Xylene	0.00049	J	mg/kg	0.0014	0.00042	1
Xylenes, Total	0.00049	J	mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	0.0014	J	mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	0.0011	J	mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-10
 Client ID: PB-886-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:20
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 00:28
 Analyst: JC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-11
 Client ID: PB-886-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 00:48
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-12
 Client ID: PB-886-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 14:48
 Analyst: AJK
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00025	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.0012		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	0.0032		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.010		mg/kg	0.0023	0.00064	1
o-Xylene	0.015		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.025		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0089		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.14		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.17		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	128		70-130
4-Bromofluorobenzene	277	Q	70-130
Dibromofluoromethane	90		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13
 Client ID: PB-886-27-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 01:09
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	0.00018	J	mg/kg	0.00095	0.00013	1
p/m-Xylene	0.00073	J	mg/kg	0.0019	0.00053	1
o-Xylene	0.00034	J	mg/kg	0.00095	0.00028	1
Xylenes, Total	0.0011	J	mg/kg	0.00095	0.00028	1
Isopropylbenzene	0.00021	J	mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	0.34	E	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.051		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	102		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13
 Client ID: PB-886-27-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 14:27
 Analyst: AJK
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.062	0.016	1
Toluene	ND		mg/kg	0.062	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	ND		mg/kg	0.062	0.0087	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.062	0.018	1
Xylenes, Total	ND		mg/kg	0.062	0.018	1
Isopropylbenzene	ND		mg/kg	0.062	0.0067	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-14
 Client ID: DUP-21
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 15:08
 Analyst: AJK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.00033	J	mg/kg	0.0013	0.00018	1
p/m-Xylene	0.00087	J	mg/kg	0.0025	0.00070	1
o-Xylene	0.0012	J	mg/kg	0.0013	0.00037	1
Xylenes, Total	0.0021	J	mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.00098	J	mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.024		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.025		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	150	Q	70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-15
 Client ID: FB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 12:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 10/12/21 15:29
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 10/12/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-15
 Client ID: FB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 12:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 15:50
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	122		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-16
 Client ID: TB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 10/12/21 15:35
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 10/12/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-16
 Client ID: TB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 16:17
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	118		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 10/12/21 15:11
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 10/12/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 15-16 Batch: WG1557629-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 10/12/21 21:03
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02-05,07-11,13 Batch: WG1558059-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 10/12/21 21:03
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 06 Batch: WG1558061-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 10/12/21 11:51
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 15-16 Batch: WG1558233-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	116		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 10/13/21 11:11
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13 Batch: WG1558494-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 10/13/21 11:11
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,12,14 Batch: WG1558495-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	101		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2154810

Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 15-16 Batch: WG1557629-2									
1,2-Dibromoethane	116		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02-05,07-11,13 Batch: WG1558059-3 WG1558059-4								
Methyl tert butyl ether	102		102		66-130	0		30
Benzene	100		100		70-130	0		30
1,2-Dichloroethane	94		94		70-130	0		30
Toluene	101		100		70-130	1		30
1,2-Dibromoethane	110		112		70-130	2		30
Ethylbenzene	102		100		70-130	2		30
p/m-Xylene	99		97		70-130	2		30
o-Xylene	98		97		70-130	1		30
Isopropylbenzene	107		104		70-130	3		30
1,3,5-Trimethylbenzene	105		103		70-130	2		30
1,2,4-Trimethylbenzene	104		101		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	90		92		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	89		90		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 06 Batch: WG1558061-3 WG1558061-4								
Methyl tert butyl ether	102		102		66-130	0		30
Benzene	100		100		70-130	0		30
1,2-Dichloroethane	94		94		70-130	0		30
Toluene	101		100		70-130	1		30
1,2-Dibromoethane	110		112		70-130	2		30
Ethylbenzene	102		100		70-130	2		30
p/m-Xylene	99		97		70-130	2		30
o-Xylene	98		97		70-130	1		30
Isopropylbenzene	107		104		70-130	3		30
1,3,5-Trimethylbenzene	105		103		70-130	2		30
1,2,4-Trimethylbenzene	104		101		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	90		92		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	89		90		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 15-16 Batch: WG1558233-3 WG1558233-4								
Methyl tert butyl ether	99		94		63-130	5		20
Benzene	95		98		70-130	3		20
1,2-Dichloroethane	110		110		70-130	0		20
Toluene	95		100		70-130	5		20
Ethylbenzene	94		99		70-130	5		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		100		70-130	5		20
Isopropylbenzene	91		95		70-130	4		20
1,3,5-Trimethylbenzene	87		91		64-130	4		20
1,2,4-Trimethylbenzene	88		89		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		98		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	100		88		70-130
Dibromofluoromethane	114		105		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13 Batch: WG1558494-3 WG1558494-4								
Methyl tert butyl ether	87		95		66-130	9		30
Benzene	95		96		70-130	1		30
1,2-Dichloroethane	87		90		70-130	3		30
Toluene	96		99		70-130	3		30
1,2-Dibromoethane	99		108		70-130	9		30
Ethylbenzene	97		100		70-130	3		30
p/m-Xylene	94		96		70-130	2		30
o-Xylene	93		96		70-130	3		30
Isopropylbenzene	101		103		70-130	2		30
1,3,5-Trimethylbenzene	99		102		70-130	3		30
1,2,4-Trimethylbenzene	98		101		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	89		90		70-130
Toluene-d8	101		103		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	91		89		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,12,14 Batch: WG1558495-3 WG1558495-4								
Methyl tert butyl ether	87		95		66-130	9		30
Benzene	95		96		70-130	1		30
1,2-Dichloroethane	87		90		70-130	3		30
Toluene	96		99		70-130	3		30
1,2-Dibromoethane	99		108		70-130	9		30
Ethylbenzene	97		100		70-130	3		30
p/m-Xylene	94		96		70-130	2		30
o-Xylene	93		96		70-130	3		30
Isopropylbenzene	101		103		70-130	2		30
1,3,5-Trimethylbenzene	99		102		70-130	3		30
1,2,4-Trimethylbenzene	98		101		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	89		89		70-130
Toluene-d8	101		103		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	91		89		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-01
 Client ID: PB-886-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 08:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 11:18
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	190	24.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	150	47.	1
Benzo(b)fluoranthene	ND		ug/kg	120	33.	1
Chrysene	ND		ug/kg	120	20.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	ND		ug/kg	150	23.	1
Fluorene	ND		ug/kg	190	19.	1
Phenanthrene	ND		ug/kg	120	24.	1
Pyrene	ND		ug/kg	120	19.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	72		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-02
 Client ID: PB-886-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 08:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 11:41
 Analyst: JG
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	200	24.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	160	48.	1
Benzo(b)fluoranthene	ND		ug/kg	120	33.	1
Chrysene	ND		ug/kg	120	20.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	ND		ug/kg	160	23.	1
Fluorene	ND		ug/kg	200	19.	1
Phenanthrene	ND		ug/kg	120	24.	1
Pyrene	ND		ug/kg	120	19.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-03
 Client ID: PB-886-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:20
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/14/21 16:48
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	200	24.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	160	49.	1
Benzo(b)fluoranthene	ND		ug/kg	120	34.	1
Chrysene	ND		ug/kg	120	21.	1
Anthracene	ND		ug/kg	120	39.	1
Benzo(ghi)perylene	ND		ug/kg	160	23.	1
Fluorene	ND		ug/kg	200	19.	1
Phenanthrene	ND		ug/kg	120	24.	1
Pyrene	ND		ug/kg	120	20.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	127	Q	23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	65		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-04
 Client ID: PB-886-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 12:28
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	190	24.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	160	47.	1
Benzo(b)fluoranthene	ND		ug/kg	120	33.	1
Chrysene	ND		ug/kg	120	20.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	ND		ug/kg	160	23.	1
Fluorene	ND		ug/kg	190	19.	1
Phenanthrene	43	J	ug/kg	120	24.	1
Pyrene	ND		ug/kg	120	19.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-05
 Client ID: PB-886-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 10:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 12:52
 Analyst: JG
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	180	21.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	100	29.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	20.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	ND		ug/kg	100	21.	1
Pyrene	ND		ug/kg	100	17.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	94		30-120
4-Terphenyl-d14	89		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-06
 Client ID: PB-886-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 13:15
 Analyst: JG
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	62	J	ug/kg	180	21.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	100	30.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	320		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	880		ug/kg	180	17.	1
Phenanthrene	1700		ug/kg	100	21.	1
Pyrene	100		ug/kg	100	17.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	80		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-07
 Client ID: PB-886-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 13:39
 Analyst: JG
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	180	21.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	100	30.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	ND		ug/kg	100	21.	1
Pyrene	ND		ug/kg	100	17.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	72		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-08
 Client ID: PB-886-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:35
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 14:02
 Analyst: JG
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	180	22.	1
Benzo(a)anthracene	ND		ug/kg	110	21.	1
Benzo(a)pyrene	ND		ug/kg	150	45.	1
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Chrysene	ND		ug/kg	110	19.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	ND		ug/kg	150	22.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Pyrene	ND		ug/kg	110	18.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-09
 Client ID: PB-886-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:45
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 14:26
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	190	23.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	150	47.	1
Benzo(b)fluoranthene	ND		ug/kg	120	32.	1
Chrysene	ND		ug/kg	120	20.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	ND		ug/kg	150	23.	1
Fluorene	44	J	ug/kg	190	19.	1
Phenanthrene	120		ug/kg	120	23.	1
Pyrene	ND		ug/kg	120	19.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	79		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-10
 Client ID: PB-886-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:20
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 14:49
 Analyst: JG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	140	J	ug/kg	180	22.	1
Benzo(a)anthracene	22	J	ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	150	44.	1
Benzo(b)fluoranthene	36	J	ug/kg	110	31.	1
Chrysene	93	J	ug/kg	110	19.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	27	J	ug/kg	150	21.	1
Fluorene	30	J	ug/kg	180	18.	1
Phenanthrene	120		ug/kg	110	22.	1
Pyrene	110		ug/kg	110	18.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	56		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-11
 Client ID: PB-886-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 15:13
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	200	25.	1
Benzo(a)anthracene	ND		ug/kg	120	23.	1
Benzo(a)pyrene	ND		ug/kg	160	49.	1
Benzo(b)fluoranthene	ND		ug/kg	120	34.	1
Chrysene	ND		ug/kg	120	21.	1
Anthracene	ND		ug/kg	120	39.	1
Benzo(ghi)perylene	ND		ug/kg	160	24.	1
Fluorene	ND		ug/kg	200	20.	1
Phenanthrene	ND		ug/kg	120	25.	1
Pyrene	ND		ug/kg	120	20.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-12
 Client ID: PB-886-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 15:36
 Analyst: JG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	22	J	ug/kg	180	22.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	110	30.	1
Chrysene	31	J	ug/kg	110	18.	1
Anthracene	34	J	ug/kg	110	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	54	J	ug/kg	180	17.	1
Phenanthrene	120		ug/kg	110	22.	1
Pyrene	45	J	ug/kg	110	18.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13
 Client ID: PB-886-27-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 16:00
 Analyst: JG
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	170	21.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	42.	1
Benzo(b)fluoranthene	ND		ug/kg	100	29.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	20.	1
Fluorene	ND		ug/kg	170	17.	1
Phenanthrene	ND		ug/kg	100	21.	1
Pyrene	ND		ug/kg	100	17.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	84		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-14
 Client ID: DUP-21
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/12/21 12:50
 Analyst: SZ
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 10/10/21 02:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	180	22.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	100	30.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	ND		ug/kg	100	21.	1
Pyrene	ND		ug/kg	100	18.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-15
 Client ID: FB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 12:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 10/13/21 20:09
 Analyst: ALS

Extraction Method: EPA 3510C
 Extraction Date: 10/12/21 11:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.05	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.02	J	ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	0.02	J	ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	41		10-120
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	70		15-120
2,4,6-Tribromophenol	62		10-120
4-Terphenyl-d14	75		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/11/21 12:24
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-13 Batch: WG1556449-1					
Naphthalene	ND		ug/kg	160	20.
Benzo(a)anthracene	ND		ug/kg	97	18.
Benzo(a)pyrene	ND		ug/kg	130	39.
Benzo(b)fluoranthene	ND		ug/kg	97	27.
Chrysene	ND		ug/kg	97	17.
Anthracene	ND		ug/kg	97	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	97	20.
Pyrene	ND		ug/kg	97	16.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	96		25-120
Phenol-d6	93		10-120
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	89		30-120
2,4,6-Tribromophenol	92		10-136
4-Terphenyl-d14	90		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D
 Analytical Date: 10/12/21 04:51
 Analyst: SZ

Extraction Method: EPA 3546
 Extraction Date: 10/10/21 02:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 14 Batch: WG1556713-1					
Naphthalene	ND		ug/kg	160	20.
Benzo(a)anthracene	ND		ug/kg	99	18.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	99	28.
Chrysene	ND		ug/kg	99	17.
Anthracene	ND		ug/kg	99	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	99	20.
Pyrene	ND		ug/kg	99	16.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	91		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 10/13/21 18:35
Analyst: ALS

Extraction Method: EPA 3510C
Extraction Date: 10/12/21 11:07

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 15 Batch: WG1557513-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	0.02	J	ug/l	0.10	0.02
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02
Chrysene	0.02	J	ug/l	0.10	0.01
Benzo(b)fluoranthene	0.05	J	ug/l	0.05	0.01
Benzo(a)pyrene	0.03	J	ug/l	0.10	0.02
Benzo(ghi)perylene	0.04	J	ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	48		21-120
Phenol-d6	39		10-120
Nitrobenzene-d5	50		23-120
2-Fluorobiphenyl	65		15-120
2,4,6-Tribromophenol	63		10-120
4-Terphenyl-d14	74		41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-13 Batch: WG1556449-2 WG1556449-3								
Naphthalene	82		94		40-140	14		50
Benzo(a)anthracene	93		98		40-140	5		50
Benzo(a)pyrene	98		107		40-140	9		50
Benzo(b)fluoranthene	94		104		40-140	10		50
Chrysene	88		95		40-140	8		50
Anthracene	87		92		40-140	6		50
Benzo(ghi)perylene	93		99		40-140	6		50
Fluorene	92		96		40-140	4		50
Phenanthrene	86		91		40-140	6		50
Pyrene	90		95		35-142	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	91		103		25-120
Phenol-d6	90		100		10-120
Nitrobenzene-d5	89		99		23-120
2-Fluorobiphenyl	88		99		30-120
2,4,6-Tribromophenol	96		99		10-136
4-Terphenyl-d14	87		92		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 14 Batch: WG1556713-2 WG1556713-3								
Naphthalene	81		82		40-140	1		50
Benzo(a)anthracene	85		85		40-140	0		50
Benzo(a)pyrene	88		88		40-140	0		50
Benzo(b)fluoranthene	83		84		40-140	1		50
Chrysene	82		82		40-140	0		50
Anthracene	85		84		40-140	1		50
Benzo(ghi)perylene	83		85		40-140	2		50
Fluorene	84		86		40-140	2		50
Phenanthrene	83		82		40-140	1		50
Pyrene	85		86		35-142	1		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	80		82		23-120
2-Fluorobiphenyl	82		82		30-120
4-Terphenyl-d14	94		94		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 15 Batch: WG1557513-2 WG1557513-3								
Naphthalene	63		57		40-140	10		40
Fluorene	73		69		40-140	6		40
Phenanthrene	68		67		40-140	1		40
Anthracene	71		67		40-140	6		40
Pyrene	74		75		26-127	1		40
Benzo(a)anthracene	75		78		40-140	4		40
Chrysene	67		70		40-140	4		40
Benzo(b)fluoranthene	75		86		40-140	14		40
Benzo(a)pyrene	75		81		40-140	8		40
Benzo(ghi)perylene	66		74		40-140	11		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	54		47		21-120
Phenol-d6	44		41		10-120
Nitrobenzene-d5	55		49		23-120
2-Fluorobiphenyl	69		63		15-120
2,4,6-Tribromophenol	65		56		10-120
4-Terphenyl-d14	73		73		41-149



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-01

Date Collected: 10/07/21 08:40

Client ID: PB-886-01-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.35		mg/kg	4.55	0.244	2	10/08/21 21:25	10/13/21 17:32	EPA 3050B	1,6010D	JC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-02

Date Collected: 10/07/21 08:50

Client ID: PB-886-02-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.80		mg/kg	4.64	0.248	2	10/08/21 21:25	10/13/21 17:24	EPA 3050B	1,6010D	JC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-03

Date Collected: 10/07/21 09:20

Client ID: PB-886-03-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.50		mg/kg	4.81	0.258	2	10/08/21 21:25	10/13/21 17:28	EPA 3050B	1,6010D	JC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-04
 Client ID: PB-886-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.09		mg/kg	4.65	0.249	2	10/08/21 21:25	10/13/21 18:02	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-05

Date Collected: 10/07/21 10:10

Client ID: PB-886-05-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.94	J	mg/kg	4.12	0.221	2	10/08/21 21:25	10/13/21 18:07	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-06

Date Collected: 10/07/21 11:10

Client ID: PB-886-08-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	81.9		mg/kg	2.10	0.112	1	10/08/21 21:25	10/12/21 23:25	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-07

Date Collected: 10/07/21 11:30

Client ID: PB-886-09-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.76	J	mg/kg	2.10	0.113	1	10/08/21 21:25	10/13/21 00:00	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-08

Date Collected: 10/07/21 11:35

Client ID: PB-886-11-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.7		mg/kg	2.14	0.115	1	10/08/21 21:25	10/13/21 00:05	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-09

Date Collected: 10/07/21 11:45

Client ID: PB-886-12-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.66		mg/kg	4.58	0.245	2	10/08/21 21:25	10/13/21 18:11	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-10

Date Collected: 10/07/21 13:20

Client ID: PB-886-18-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.92	J	mg/kg	2.10	0.112	1	10/08/21 21:25	10/13/21 00:15	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-11
 Client ID: PB-886-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.51		mg/kg	2.35	0.126	1	10/08/21 21:25	10/13/21 00:19	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-12

Date Collected: 10/07/21 13:40

Client ID: PB-886-26-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.15		mg/kg	2.08	0.111	1	10/08/21 21:25	10/13/21 00:24	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13

Date Collected: 10/07/21 13:50

Client ID: PB-886-27-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.28		mg/kg	2.04	0.109	1	10/08/21 21:25	10/13/21 00:28	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-14

Date Collected: 10/07/21 00:00

Client ID: DUP-21

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.87	J	mg/kg	2.09	0.112	1	10/08/21 21:25	10/13/21 00:33	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-15

Date Collected: 10/07/21 12:00

Client ID: FB-211007

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	10/12/21 06:28	10/14/21 21:40	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 15 Batch: WG1555973-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	10/12/21 06:28	10/14/21 20:35	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-14 Batch: WG1556309-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/08/21 21:25	10/12/21 23:07	1,6010D	DL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 15 Batch: WG1555973-2								
Lead, Total	97		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-14 Batch: WG1556309-2 SRM Lot Number: D109-540								
Lead, Total	82		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 15 QC Batch ID: WG1555973-3 QC Sample: L2154461-01 Client ID: MS Sample												
Lead, Total	ND	530	516.4	97		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1556309-3 QC Sample: L2154810-01 Client ID: PB-886-01-SS01												
Lead, Total	6.35	48	42.0	74	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2154810

Report Date: 10/21/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1556309-4 QC Sample: L2154810-01 Client ID: PB-886-01-SS01						
Lead, Total	6.35	6.39	mg/kg	1		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-01

Date Collected: 10/07/21 08:40

Client ID: PB-886-01-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.7		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-02
 Client ID: PB-886-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 08:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-03

Date Collected: 10/07/21 09:20

Client ID: PB-886-03-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-04
 Client ID: PB-886-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-05
Client ID: PB-886-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 10:10
Date Received: 10/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-06
 Client ID: PB-886-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.6		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-07
 Client ID: PB-886-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.6		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-08

Date Collected: 10/07/21 11:35

Client ID: PB-886-11-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.9		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-09
 Client ID: PB-886-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:45
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-10
Client ID: PB-886-18-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:20
Date Received: 10/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-11

Date Collected: 10/07/21 13:30

Client ID: PB-886-24-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.6		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-12
Client ID: PB-886-26-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:40
Date Received: 10/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.2		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13

Date Collected: 10/07/21 13:50

Client ID: PB-886-27-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.0		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-14
 Client ID: DUP-21
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.1		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2154810

Report Date: 10/21/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-14 QC Batch ID: WG1556018-1 QC Sample: L2154810-01 Client ID: PB-886-01-SS01						
Solids, Total	84.7	84.8	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2154810-01A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-01B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-01C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-01D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-01F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-02A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-02B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-02C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-02D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-02F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-03A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-03B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-03C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-03D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-03F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-04A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-04B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-04C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-04D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2154810-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-04F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-05A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-05B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-05C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-05D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-05F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-06A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-06B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-06C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-06D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-06F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-07A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-07B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-07C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-07D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-07F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-08A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-08B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-08C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-08D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-08F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-09A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-09B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Serial_No:10212116:50
Lab Number: L2154810
Report Date: 10/21/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2154810-09C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-09D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-09F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-10A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2154810-10B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-10C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-10D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-10F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)
L2154810-11A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2154810-11B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-11C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-11D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-11F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)
L2154810-12A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2154810-12B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-12C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-12D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-12F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)
L2154810-13A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2154810-13B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260H(14),PA-8260HLW(14)
L2154810-13C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260H(14),PA-8260HLW(14)
L2154810-13D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-13F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2154810-14A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2154810-14B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-14C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-14D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-14F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)
L2154810-15A	Vial HCl preserved	A	NA		3.2	Y	Absent		PA-8260(14)
L2154810-15B	Vial HCl preserved	A	NA		3.2	Y	Absent		PA-8260(14)
L2154810-15C	Vial HCl preserved	A	NA		3.2	Y	Absent		8011(14)
L2154810-15D	Plastic 250ml HNO3 preserved	A	<2	<2	3.2	Y	Absent		PB-6020T-PPB(180)
L2154810-15E	Amber 250ml unpreserved	A	7	7	3.2	Y	Absent		PA-8270SIM-LVI(7)
L2154810-15F	Amber 250ml unpreserved	A	7	7	3.2	Y	Absent		PA-8270SIM-LVI(7)
L2154810-16A	Vial HCl preserved	A	NA		3.2	Y	Absent		PA-8260(14)
L2154810-16B	Vial HCl preserved	A	NA		3.2	Y	Absent		PA-8260(14)
L2154810-16C	Vial Na2S2O3 preserved	A	NA		3.2	Y	Absent		8011(14)
L2154810-16D	Vial Na2S2O3 preserved	A	NA		3.2	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 2 OF 2

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Project Information

Project Name: PHILADELPHIA REFINERY

Project Location: PHILADELPHIA, PA

Project #: 200.00135.03

Project Manager: WILIAM SCHMIDT

ALPHA Quote #: 13161

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)

Date Due: _____ Time: _____

Date Rec'd in Lab: 10/8/21

Report Information - Data Deliverables

FAX EMAIL

ADEX Add'l Deliverables

ALPHA Job #: L2154810

Billing Information

Same as Client info PO #: _____

Client Information

Client: Parsons Construction

Address: 2127 Hamilton Ave
Trenton, NJ 08619

Phone: 25-901-4934

Fax: _____

Email: William Schmidt

These samples have been previously analyzed by Alpha

Regulatory Requirements/Report Limits

State / Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:

See pg. 1

ANALYSIS

PHILADELPHIA REFINERY
1-5

LAB-SPECIALIST
1-5

SAMPLE HANDLING

Filtration _____

Done

Not needed

Lab to do

Preservation _____

Lab to do

(Please specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS	TOTAL # BOTTLES	
		Date	Time					
54810-11	PB-886-24-5501	10/7	1330	S	JS	Y	6	
-12	PB-886-26-5501	↓	1340	S	↓	X	6	
-13	PB-886-27-5501		1350	S		X	6	
-14	DUP-21		-	S		X	6	
-15	FB-211007		1200	W		X	6	
-16	TB-211007						X	4

Container Type			
Preservative			
Relinquished By:	Date/Time	Received By:	Date/Time
<u>[Signature]</u>	<u>10/7 1530</u>	<u>[Signature]</u>	<u>10/7 2115</u>

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved.

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

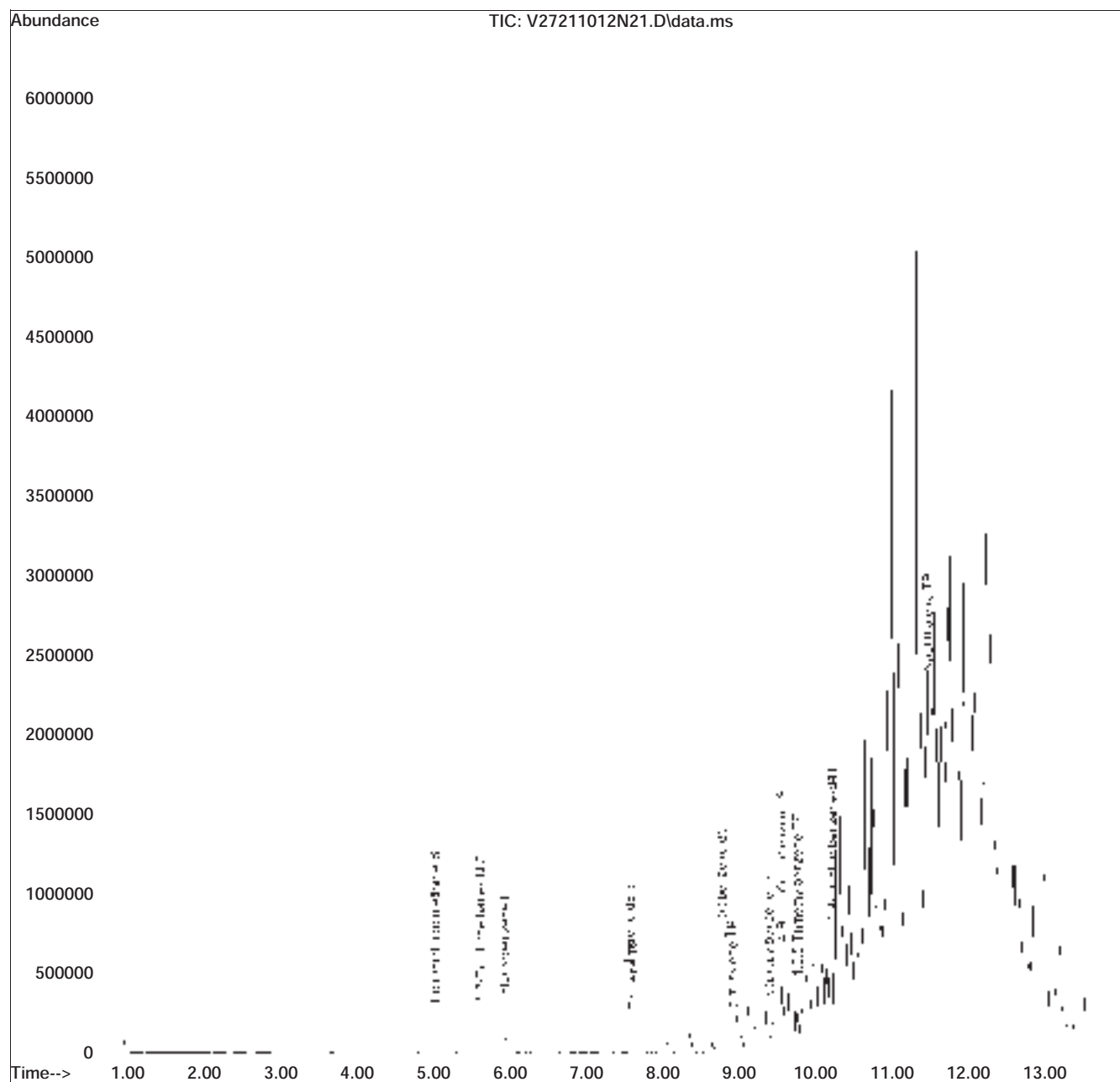
10/8/21
07:00

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211012N\
Data File : V27211012N21.D
Acq On : 13 Oct 2021 02:10 am
Operator : VOA127:JC
Sample : L2154810-06,31H,3.71,5,0.100,,A
Misc : WG1558061,ICAL18360
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 13 07:53:25 2021
Quant Method : I:\VOLATILES\VOA127\2021\211012N\V127_211005N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Oct 06 10:48:31 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list12N\V27211012N01.D•

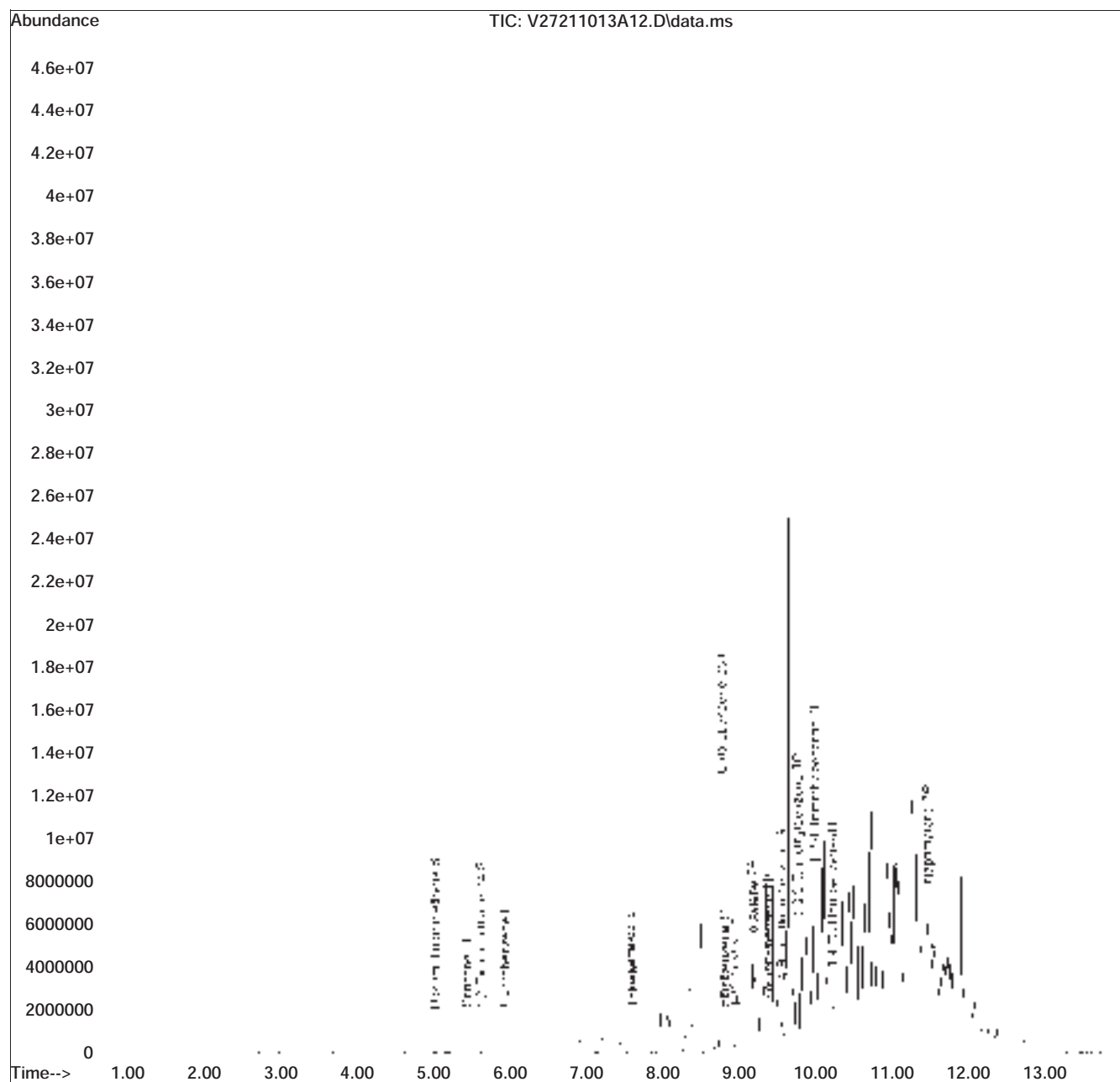


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211013A\
 Data File : V27211013A12.D
 Acq On : 13 Oct 2021 02:48 pm
 Operator : VOA127:AJK
 Sample : L2154810-12,31,4.79,5,,B
 Misc : WG1558495,ICAL18360
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Oct 13 16:21:31 2021
 Quant Method : I:\VOLATILES\VOA127\2021\211013A\V127_211005N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Wed Oct 06 10:48:31 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V27211013A01.D•

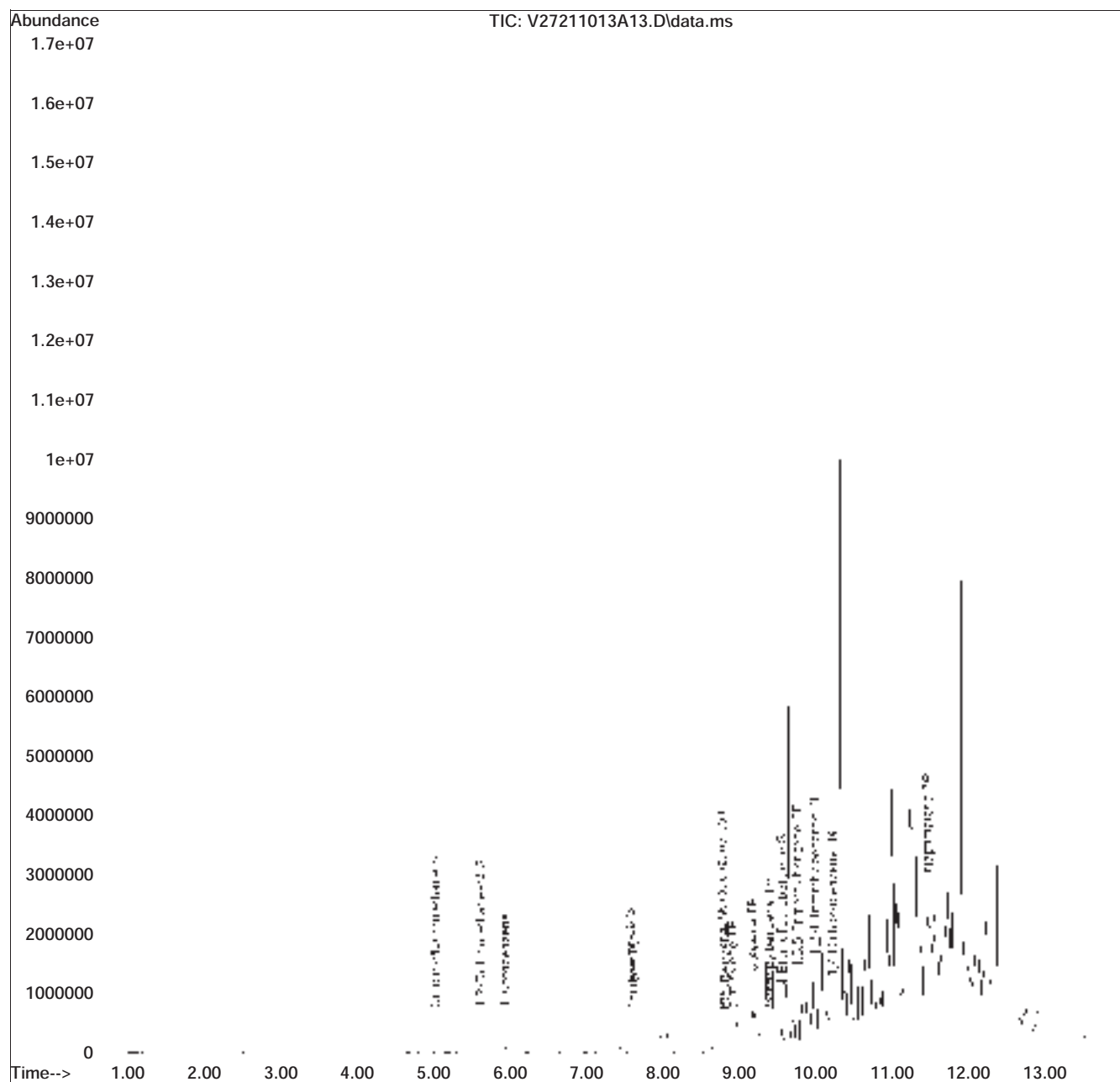


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211013A\
Data File : V27211013A13.D
Acq On : 13 Oct 2021 03:08 pm
Operator : VOA127:AJK
Sample : L2154810-14,31,4.26,5,,B
Misc : WG1558495,ICAL18360
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Oct 13 16:18:54 2021
Quant Method : I:\VOLATILES\VOA127\2021\211013A\V127_211005N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Oct 06 10:48:31 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V27211013A01.D•





ANALYTICAL REPORT

Lab Number:	L2166670
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	12/20/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166670

Report Date: 12/20/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2166670-01	PB-16V137-03-SS01	SOIL	PHILADELPHIA, PA	12/03/21 10:45	12/03/21
L2166670-02	PB-16V135-05-SS01	SOIL	PHILADELPHIA, PA	12/03/21 11:40	12/03/21
L2166670-03	PB-884-01-SS01	SOIL	PHILADELPHIA, PA	12/03/21 13:40	12/03/21
L2166670-04	PB-884-02-SS01	SOIL	PHILADELPHIA, PA	12/03/21 13:50	12/03/21
L2166670-05	PB-884-03-SS01	SOIL	PHILADELPHIA, PA	12/03/21 14:00	12/03/21
L2166670-06	PB-884-04-SS01	SOIL	PHILADELPHIA, PA	12/03/21 14:10	12/03/21
L2166670-07	PB-884-11-SS01	SOIL	PHILADELPHIA, PA	12/03/21 14:15	12/03/21
L2166670-08	PB-884-12-SS01	SOIL	PHILADELPHIA, PA	12/03/21 14:25	12/03/21
L2166670-09	PB-884-27-SS01	SOIL	PHILADELPHIA, PA	12/03/21 14:45	12/03/21
L2166670-10	PB-884-28-SS01	SOIL	PHILADELPHIA, PA	12/03/21 14:55	12/03/21
L2166670-11	PB-884-29-SS01	SOIL	PHILADELPHIA, PA	12/03/21 15:10	12/03/21
L2166670-12	DUP-22	SOIL	PHILADELPHIA, PA	12/03/21 00:00	12/03/21
L2166670-13	FB-211203	WATER	PHILADELPHIA, PA	12/03/21 15:30	12/03/21
L2166670-14	TB-211203	WATER	PHILADELPHIA, PA	12/03/21 00:00	12/03/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

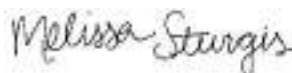
L2166670-06: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (131%) and 4-bromofluorobenzene (667%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics by SIM

L2166670-13: The Field Blank has a concentration above the reporting limit for Phenanthrene. The sample was re-extracted with the method required holding time exceeded and was non-detect for this target compound. The results of both extractions are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 12/20/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-03
 Client ID: PB-884-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 13:40
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 00:22
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00030	J	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	0.0010		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00023	J	mg/kg	0.00092	0.00013	1
p/m-Xylene	0.0034		mg/kg	0.0018	0.00051	1
o-Xylene	0.0014		mg/kg	0.00092	0.00027	1
Xylenes, Total	0.0048		mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.00072	J	mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	0.00088	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.0024		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-04
 Client ID: PB-884-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 13:50
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 18:26
 Analyst: NLK
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-05
 Client ID: PB-884-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:00
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 18:51
 Analyst: NLK
 Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-06
 Client ID: PB-884-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:10
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 02:27
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00030	J	mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.00073	J	mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.00073	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.078		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0045		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.015		mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	131	Q	70-130
4-Bromofluorobenzene	667	Q	70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-07
 Client ID: PB-884-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:15
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 00:47
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-08
 Client ID: PB-884-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:25
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 19:41
 Analyst: NLK
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	146	Q	70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	105		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-09
 Client ID: PB-884-27-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:45
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 01:12
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0010	0.00010	1
Benzene	ND		mg/kg	0.00025	0.00008	1
1,2-Dichloroethane	ND		mg/kg	0.00050	0.00013	1
Toluene	ND		mg/kg	0.00050	0.00027	1
1,2-Dibromoethane	ND		mg/kg	0.00025	0.00015	1
Ethylbenzene	ND		mg/kg	0.00050	0.00007	1
p/m-Xylene	ND		mg/kg	0.0010	0.00028	1
o-Xylene	ND		mg/kg	0.00050	0.00015	1
Xylenes, Total	ND		mg/kg	0.00050	0.00015	1
Isopropylbenzene	ND		mg/kg	0.00050	0.00005	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0010	0.00009	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0010	0.00017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-10
 Client ID: PB-884-28-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:55
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 01:37
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-11
 Client ID: PB-884-29-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 15:10
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 02:02
 Analyst: JC
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-12
 Client ID: DUP-22
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 00:00
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 21:20
 Analyst: NLK
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	140	Q	70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-13
 Client ID: FB-211203
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 15:30
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/16/21 15:58
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/16/21 13:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-13
 Client ID: FB-211203
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 15:30
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/14/21 09:37
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-14
 Client ID: TB-211203
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 00:00
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/16/21 16:06
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/16/21 13:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-14
 Client ID: TB-211203
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 00:00
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/14/21 10:04
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/13/21 13:47
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 04-05,08,12 Batch: WG1583191-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/14/21 18:08
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03,06-07,09-11 Batch: WG1583734-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 12/14/21 09:11
 Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 13-14 Batch: WG1583756-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	98		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 12/16/21 14:43
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 12/16/21 13:32

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 13-14 Batch: WG1584239-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 04-05,08,12 Batch: WG1583191-3 WG1583191-4								
Methyl tert butyl ether	114		122		66-130	7		30
Benzene	110		114		70-130	4		30
1,2-Dichloroethane	122		131	Q	70-130	7		30
Toluene	106		110		70-130	4		30
1,2-Dibromoethane	120		130		70-130	8		30
Ethylbenzene	104		109		70-130	5		30
p/m-Xylene	103		107		70-130	4		30
o-Xylene	103		109		70-130	6		30
Isopropylbenzene	106		111		70-130	5		30
1,3,5-Trimethylbenzene	108		112		70-130	4		30
1,2,4-Trimethylbenzene	109		114		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	121		120		70-130
Toluene-d8	108		108		70-130
4-Bromofluorobenzene	115		115		70-130
Dibromofluoromethane	97		98		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03,06-07,09-11 Batch: WG1583734-3 WG1583734-4								
Methyl tert butyl ether	99		101		66-130	2		30
Benzene	100		100		70-130	0		30
1,2-Dichloroethane	97		98		70-130	1		30
Toluene	106		105		70-130	1		30
1,2-Dibromoethane	99		100		70-130	1		30
Ethylbenzene	107		106		70-130	1		30
p/m-Xylene	105		105		70-130	0		30
o-Xylene	103		103		70-130	0		30
Isopropylbenzene	112		109		70-130	3		30
1,3,5-Trimethylbenzene	109		106		70-130	3		30
1,2,4-Trimethylbenzene	106		104		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	102		103		70-130
Toluene-d8	105		106		70-130
4-Bromofluorobenzene	113		110		70-130
Dibromofluoromethane	93		94		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 13-14 Batch: WG1583756-3 WG1583756-4								
Methyl tert butyl ether	85		100		63-130	16		20
Benzene	98		110		70-130	12		20
1,2-Dichloroethane	88		99		70-130	12		20
Toluene	97		100		70-130	3		20
Ethylbenzene	98		100		70-130	2		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	100		110		70-130	10		20
Isopropylbenzene	88		97		70-130	10		20
1,3,5-Trimethylbenzene	96		110		64-130	14		20
1,2,4-Trimethylbenzene	87		96		70-130	10		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	93		98		70-130
Toluene-d8	101		99		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	95		97		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 13-14 Batch: WG1584239-2									
1,2-Dibromoethane	92		-		80-120	-		20	A

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-03
 Client ID: PB-884-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 13:40
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 10:00
 Analyst: ALS
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.031	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.053	J	mg/kg	0.12	0.022	1
Chrysene	0.048	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.077	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.055	J	mg/kg	0.16	0.049	1
Benzo(ghi)perylene	0.032	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-04
 Client ID: PB-884-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 13:50
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 10:48
 Analyst: ALS
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	87		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-05
 Client ID: PB-884-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:00
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 11:12
 Analyst: ALS
 Percent Solids: 78%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.033	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.055	J	mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.053	J	mg/kg	0.12	0.023	1
Chrysene	0.048	J	mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.051	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-06
 Client ID: PB-884-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:10
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 11:36
 Analyst: ALS
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.073	J	mg/kg	0.20	0.025	1
Fluorene	0.35		mg/kg	0.20	0.020	1
Phenanthrene	0.32		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-07
 Client ID: PB-884-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:15
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 12:00
 Analyst: ALS
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.068	J	mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.065	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.091	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.089	J	mg/kg	0.12	0.023	1
Chrysene	0.087	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.095	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.074	J	mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.038	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	63		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-08
 Client ID: PB-884-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:25
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 12:49
 Analyst: ALS
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	70		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-09
 Client ID: PB-884-27-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:45
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 13:13
 Analyst: ALS
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	62		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-10
 Client ID: PB-884-28-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:55
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 13:37
 Analyst: ALS
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.045	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.060	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.042	J	mg/kg	0.12	0.023	1
Chrysene	0.038	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.039	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	74		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-11
 Client ID: PB-884-29-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 15:10
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 14:01
 Analyst: ALS
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-12
 Client ID: DUP-22
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 00:00
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 14:25
 Analyst: ALS
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	79		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-13
 Client ID: FB-211203
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 15:30
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/09/21 16:14
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 12/08/21 21:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	0.02	J	ug/l	0.10	0.01	1
Phenanthrene	0.19		ug/l	0.05	0.02	1
Anthracene	0.02	J	ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	82		15-120
4-Terphenyl-d14	88		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-13 RE
 Client ID: FB-211203
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 15:30
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/18/21 15:54
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 12/17/21 13:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	0.01	J	ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	83		15-120
4-Terphenyl-d14	98		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 12/09/21 15:16
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 12/08/21 21:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 13 Batch: WG1580888-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	78		15-120
4-Terphenyl-d14	84		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 12/15/21 07:59
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 03-12 Batch: WG1582958-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	95		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 12/18/21 14:55
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 12/17/21 13:07

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 13 Batch: WG1584717-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	0.02	J	ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	76		15-120
4-Terphenyl-d14	99		41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 13 Batch: WG1580888-2 WG1580888-3								
Naphthalene	71		71		40-140	0		40
Fluorene	75		78		40-140	4		40
Phenanthrene	72		75		40-140	4		40
Anthracene	76		79		40-140	4		40
Pyrene	77		80		26-127	4		40
Benzo(a)anthracene	72		79		40-140	9		40
Chrysene	73		76		40-140	4		40
Benzo(b)fluoranthene	74		75		40-140	1		40
Benzo(a)pyrene	75		81		40-140	8		40
Benzo(ghi)perylene	73		78		40-140	7		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	76		76		23-120
2-Fluorobiphenyl	77		78		15-120
4-Terphenyl-d14	81		85		41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03-12 Batch: WG1582958-2 WG1582958-3								
Naphthalene	80		79		40-140	1		50
Fluorene	88		88		40-140	0		50
Phenanthrene	83		84		40-140	1		50
Anthracene	85		84		40-140	1		50
Pyrene	86		86		35-142	0		50
Benzo(a)anthracene	87		86		40-140	1		50
Chrysene	81		81		40-140	0		50
Benzo(b)fluoranthene	82		81		40-140	1		50
Benzo(a)pyrene	74		74		40-140	0		50
Benzo(ghi)perylene	83		81		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	97		98		23-120
2-Fluorobiphenyl	83		84		30-120
4-Terphenyl-d14	88		86		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 13 Batch: WG1584717-2 WG1584717-3								
Naphthalene	68		69		40-140	1		40
Fluorene	80		79		40-140	1		40
Phenanthrene	79		79		40-140	0		40
Anthracene	82		82		40-140	0		40
Pyrene	89		88		26-127	1		40
Benzo(a)anthracene	79		80		40-140	1		40
Chrysene	82		82		40-140	0		40
Benzo(b)fluoranthene	92		91		40-140	1		40
Benzo(a)pyrene	86		86		40-140	0		40
Benzo(ghi)perylene	77		77		40-140	0		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	66		65		23-120
2-Fluorobiphenyl	82		80		15-120
4-Terphenyl-d14	96		94		41-149



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-03

Date Collected: 12/03/21 13:40

Client ID: PB-884-01-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	24.5		mg/kg	2.28	0.122	1	12/15/21 06:44	12/16/21 10:34	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-04

Date Collected: 12/03/21 13:50

Client ID: PB-884-02-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.62		mg/kg	2.36	0.127	1	12/15/21 06:44	12/16/21 10:39	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-05

Date Collected: 12/03/21 14:00

Client ID: PB-884-03-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.80		mg/kg	2.49	0.133	1	12/15/21 06:44	12/16/21 10:43	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-06

Date Collected: 12/03/21 14:10

Client ID: PB-884-04-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.72		mg/kg	2.43	0.130	1	12/15/21 06:44	12/16/21 10:47	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-07

Date Collected: 12/03/21 14:15

Client ID: PB-884-11-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	37.0		mg/kg	2.43	0.130	1	12/15/21 06:44	12/16/21 10:52	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-08

Date Collected: 12/03/21 14:25

Client ID: PB-884-12-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.65		mg/kg	2.40	0.129	1	12/15/21 06:44	12/16/21 10:56	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-09

Date Collected: 12/03/21 14:45

Client ID: PB-884-27-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.5		mg/kg	2.41	0.129	1	12/15/21 06:44	12/16/21 11:01	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-10

Date Collected: 12/03/21 14:55

Client ID: PB-884-28-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.37		mg/kg	2.39	0.128	1	12/15/21 06:44	12/16/21 11:05	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-11

Date Collected: 12/03/21 15:10

Client ID: PB-884-29-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.49		mg/kg	2.47	0.132	1	12/15/21 06:44	12/16/21 11:09	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-12

Date Collected: 12/03/21 00:00

Client ID: DUP-22

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	54.3		mg/kg	2.37	0.127	1	12/15/21 06:44	12/16/21 11:14	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-13

Date Collected: 12/03/21 15:30

Client ID: FB-211203

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/14/21 05:12	12/17/21 00:23	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 13 Batch: WG1582832-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	12/14/21 05:12	12/16/21 23:54	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 03-12 Batch: WG1583047-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	12/15/21 06:44	12/16/21 08:15	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 13 Batch: WG1582832-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 03-12 Batch: WG1583047-2 SRM Lot Number: D113-540								
Lead, Total	92		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 13 QC Batch ID: WG1582832-3 WG1582832-4 QC Sample: L2167147-05 Client ID: MS Sample												
Lead, Total	1.973	530	492.8	93		482.8	91		75-125	2		20
Total Metals - Mansfield Lab Associated sample(s): 03-12 QC Batch ID: WG1583047-3 QC Sample: L2168261-01 Client ID: MS Sample												
Lead, Total	1.67J	45.3	23.4	52	Q	-	-		75-125	-		20



Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166670

Report Date: 12/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 03-12 QC Batch ID: WG1583047-4 QC Sample: L2168261-01 Client ID: DUP Sample						
Lead, Total	1.67J	1.93J	mg/kg	NC		20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166670**Project Number:** 200.00135.005.03**Report Date:** 12/20/21**SAMPLE RESULTS**

Lab ID: L2166670-01

Date Collected: 12/03/21 10:45

Client ID: PB-16V137-03-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
pH (H)	10.0		SU	-	NA	1	-	12/14/21 20:15	1,9045D	AS



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166670**Project Number:** 200.00135.005.03**Report Date:** 12/20/21**SAMPLE RESULTS**

Lab ID: L2166670-02

Date Collected: 12/03/21 11:40

Client ID: PB-16V135-05-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
pH (H)	11.6		SU	-	NA	1	-	12/14/21 20:15	1,9045D	AS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-03
Client ID: PB-884-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 13:40
Date Received: 12/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-04

Date Collected: 12/03/21 13:50

Client ID: PB-884-02-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-05
Client ID: PB-884-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:00
Date Received: 12/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.0		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-06
 Client ID: PB-884-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:10
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.5		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-07

Date Collected: 12/03/21 14:15

Client ID: PB-884-11-SS01

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-08
 Client ID: PB-884-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:25
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-09
Client ID: PB-884-27-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:45
Date Received: 12/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.0		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-10
 Client ID: PB-884-28-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 14:55
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.3		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-11
 Client ID: PB-884-29-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 15:10
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.3		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-12
 Client ID: DUP-22
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/03/21 00:00
 Date Received: 12/03/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.1		%	0.100	NA	1	-	12/04/21 11:20	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

SAMPLE RESULTS

Lab ID: L2166670-13

Date Collected: 12/03/21 15:30

Client ID: FB-211203

Date Received: 12/03/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
pH (H)	7.8		SU	-	NA	1	-	12/06/21 20:55	1,9040C	RM



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 13 Batch: WG1579826-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01-02 Batch: WG1583314-1								
pH	100		-		99-101	-		



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166670

Report Date: 12/20/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 03-12 QC Batch ID: WG1579122-1 QC Sample: L2166670-03 Client ID: PB-884-01-SS01						
Solids, Total	82.6	81.4	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 13 QC Batch ID: WG1579826-2 QC Sample: L2166391-01 Client ID: DUP Sample						
pH	6.9	7.0	SU	1		5
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1583314-2 QC Sample: L2168239-01 Client ID: DUP Sample						
pH	8.6	8.2	SU	5		5

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166670**Project Number:** 200.00135.005.03**Report Date:** 12/20/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166670-01A	Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PH-9045(1)
L2166670-02A	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		PH-9045(1)
L2166670-03A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2166670-03B	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-03C	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-03D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2166670-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2166670-03F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2166670-04A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2166670-04B	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-04C	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-04D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2166670-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2166670-04F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2166670-05A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2166670-05B	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-05C	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-05D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2166670-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2166670-05F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2166670-06A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2166670-06B	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166670**Project Number:** 200.00135.005.03**Report Date:** 12/20/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166670-06C	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-06D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2166670-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2166670-06F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2166670-07A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2166670-07B	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-07C	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-07D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2166670-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2166670-07F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2166670-08A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2166670-08B	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-08C	Vial water preserved	B	NA		2.1	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-08D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2166670-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2166670-08F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2166670-09A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2166670-09B	Vial water preserved	A	NA		4.2	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-09C	Vial water preserved	A	NA		4.2	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-09D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2166670-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2166670-09F	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		PA-PAH(14)
L2166670-10A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2166670-10B	Vial water preserved	A	NA		4.2	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-10C	Vial water preserved	A	NA		4.2	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-10D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2166670-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2166670-10F	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166670**Project Number:** 200.00135.005.03**Report Date:** 12/20/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166670-11A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2166670-11B	Vial water preserved	A	NA		4.2	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-11C	Vial water preserved	A	NA		4.2	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-11D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2166670-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2166670-11F	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		PA-PAH(14)
L2166670-12A	Vial MeOH preserved	A	NA		4.2	Y	Absent		PA-8260HLW(14)
L2166670-12B	Vial water preserved	A	NA		4.2	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-12C	Vial water preserved	A	NA		4.2	Y	Absent	04-DEC-21 11:52	PA-8260HLW(14)
L2166670-12D	Plastic 2oz unpreserved for TS	A	NA		4.2	Y	Absent		TS(7)
L2166670-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.2	Y	Absent		PB-TI(180)
L2166670-12F	Glass 120ml/4oz unpreserved	A	NA		4.2	Y	Absent		PA-PAH(14)
L2166670-13A	Vial HCl preserved	A	NA		4.2	Y	Absent		PA-8260(14)
L2166670-13B	Vial HCl preserved	A	NA		4.2	Y	Absent		PA-8260(14)
L2166670-13C	Vial HCl preserved	A	NA		4.2	Y	Absent		8011(14)
L2166670-13D	Plastic 250ml HNO3 preserved	A	<2	<2	4.2	Y	Absent		PH-9040(1)
L2166670-13E	Plastic 250ml unpreserved	A	7	7	4.2	Y	Absent		PB-6020T-PPB(180)
L2166670-13F	Plastic 250ml unpreserved	A	7	7	4.2	Y	Absent		PA-PAHSIM-LVI(7)
L2166670-13G	Amber 250ml unpreserved	A	7	7	4.2	Y	Absent		PA-PAHSIM-LVI(7)
L2166670-14A	Vial HCl preserved	A	NA		4.2	Y	Absent		PA-8260(14)
L2166670-14B	Vial HCl preserved	A	NA		4.2	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166670
Report Date: 12/20/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2166670

Project Number: 200.00135.005.03

Report Date: 12/20/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 2

Westborough, MA
 TEL: 508-898-9220
 FAX: 508-898-9193

Mansfield, MA
 TEL: 508-822-9300
 FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to add@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
120670-01	PB-1637-03-5501	12/3	1045	S	TS
02	PB-1635-05-5501		1140	S	TS
03	PB-884-01-5501		1340	S	TS
04	PB-884-02-5501		1350	S	TS
05	PB-884-03-5501		1400	S	TS
06	PB-884-04-5501		1410	S	TS
07	PB-884-11-5501		1415	S	TS
08	PB-884-12-5501		1425	S	TS
09	PB-884-27-5501		1445	S	TS
10	PB-884-28-5501		1455	S	TS

Date Rec'd in Lab: 12/4/21 ALPHA Job #: L21dole70

Report Information Data Deliverables FAX EMAIL ADEx Add'l Deliverables **Billing Information** Same as Client Info PO #: 3894

Regulatory Requirements/Report Limits
 State/Fed Program Criteria

ANALYSIS														SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL BOTTOMS
PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist	Sample Specific Comments				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		21			
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<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6			
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Container Type	G	G	G	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-

Relinquished By: [Signature] Date/Time: 12/3/21 10:15
 Received By: [Signature] Date/Time: 12/3/21 12:00
 Paul Maggella 12/3/21 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-011(A) Rev 5-2014

Paul Maggella 12/4/21 0220
 12/4/21 0220

PADEP Short List Analytical List:

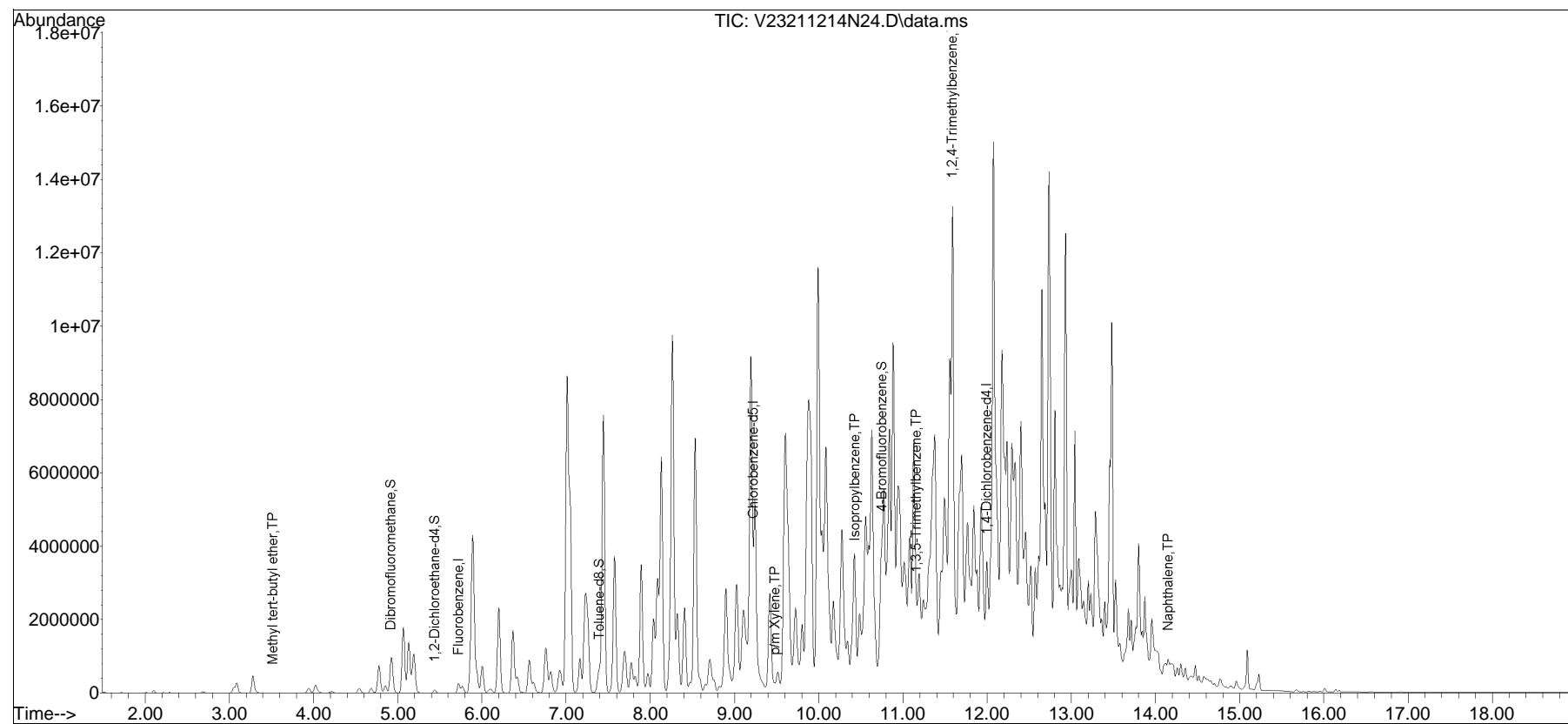
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
6. Waste Oil – benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, lead

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA123\2021\211214N\
Data File : V23211214N24.D
Acq On : 15 Dec 2021 02:27 am
Operator : VOA123:JC
Sample : L2166670-06,31,6.00,5,,B
Misc : WG1583734,ICAL18401
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Dec 15 08:01:25 2021
Quant Method : I:\VOLATILES\VOA123\2021\211214N\V123_211020N_8260D.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Oct 21 08:44:24 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14N\V23211214N01.D•





ANALYTICAL REPORT

Lab Number:	L2166871
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	12/21/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166871

Report Date: 12/21/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2166871-01	PB-884-22-SS01	SOIL	PHILADELPHIA, PA	12/06/21 10:20	12/06/21
L2166871-02	PB-884-07-SS01	SOIL	PHILADELPHIA, PA	12/06/21 10:45	12/06/21
L2166871-03	PB-884-05-SS01	SOIL	PHILADELPHIA, PA	12/06/21 11:00	12/06/21
L2166871-04	PB-884-06-SS01	SOIL	PHILADELPHIA, PA	12/06/21 11:30	12/06/21
L2166871-05	PB-884-26-SS01	SOIL	PHILADELPHIA, PA	12/06/21 12:00	12/06/21
L2166871-06	PB-884-10-SS01	SOIL	PHILADELPHIA, PA	12/06/21 12:20	12/06/21
L2166871-07	PB-885-01-SS01	SOIL	PHILADELPHIA, PA	12/06/21 13:20	12/06/21
L2166871-08	PB-885-02-SS01	SOIL	PHILADELPHIA, PA	12/06/21 13:30	12/06/21
L2166871-09	PB-885-07-SS01	SOIL	PHILADELPHIA, PA	12/06/21 13:45	12/06/21
L2166871-10	PB-885-16-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:00	12/06/21
L2166871-11	PB-885-03-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:10	12/06/21
L2166871-12	PB-885-08-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:20	12/06/21
L2166871-13	PB-885-09-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:30	12/06/21
L2166871-14	PB-885-10-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:40	12/06/21
L2166871-15	PB-885-11-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:50	12/06/21
L2166871-16	FB-211206	WATER	PHILADELPHIA, PA	12/06/21 15:00	12/06/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2166871-04: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (152%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2166871-12: The sample has elevated detection limits due to the dilution required by matrix interferences encountered during the concentration of the sample.

Semivolatile Organics by SIM

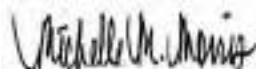
The WG1582162-1 Method Blank, associated with L2166871-16, has a concentration above the reporting limit for Naphthalene and Phenanthrene. Since the associated sample concentrations are either greater than 10x the blank concentration or non-detect to the RL for this target analyte, no corrective action is required. Any results detected below the reporting limit are qualified with a "B".

Total Metals

L2166871-04, -07, -08, and -10: The sample has an elevated detection limit due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 12/21/21

ORGANICS



VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-01
 Client ID: PB-884-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 10:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 19:43
 Analyst: MV
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00027	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-02
 Client ID: PB-884-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 10:45
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 06:45
 Analyst: MV
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-03
 Client ID: PB-884-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 20:37
 Analyst: MV
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	ND		mg/kg	0.00080	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	ND		mg/kg	0.0016	0.00087	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	ND		mg/kg	0.0016	0.00023	1
p/m-Xylene	ND		mg/kg	0.0032	0.00090	1
o-Xylene	ND		mg/kg	0.0016	0.00047	1
Xylenes, Total	ND		mg/kg	0.0016	0.00047	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0032	0.00054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-04
 Client ID: PB-884-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/16/21 19:44
 Analyst: AJK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00030	J	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	0.00069	J	mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	0.00052	J	mg/kg	0.00090	0.00013	1
p/m-Xylene	0.0012	J	mg/kg	0.0018	0.00051	1
o-Xylene	0.00073	J	mg/kg	0.00090	0.00026	1
Xylenes, Total	0.0019	J	mg/kg	0.00090	0.00026	1
Isopropylbenzene	0.00039	J	mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	0.0042		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.0064		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	152	Q	70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-05
 Client ID: PB-884-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 12:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 21:04
 Analyst: MV
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-06
 Client ID: PB-884-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 12:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 21:31
 Analyst: MV
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	104		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-07
 Client ID: PB-885-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 21:58
 Analyst: MV
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-08
 Client ID: PB-885-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 22:26
 Analyst: MV
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-09
 Client ID: PB-885-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:45
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 22:53
 Analyst: MV
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-10
 Client ID: PB-885-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 23:21
 Analyst: MV
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-11
 Client ID: PB-885-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:10
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 23:48
 Analyst: MV
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-12
 Client ID: PB-885-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 18:33
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00083	0.00021	1
Toluene	ND		mg/kg	0.00083	0.00045	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00024	1
Ethylbenzene	ND		mg/kg	0.00083	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00083	0.00024	1
Xylenes, Total	ND		mg/kg	0.00083	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00083	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-13
 Client ID: PB-885-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 18:54
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	86		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-14
 Client ID: PB-885-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:40
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 19:14
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0012	0.00033	1
Xylenes, Total	ND		mg/kg	0.0012	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-15
 Client ID: PB-885-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:50
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 19:35
 Analyst: JC
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-16
 Client ID: FB-211206
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 15:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/16/21 16:57
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/16/21 13:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-16
 Client ID: FB-211206
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 15:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/16/21 09:31
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 12/13/21 16:33
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05-11 Batch: WG1582904-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/15/21 06:20
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02 Batch: WG1583937-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/15/21 18:13
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 12-15 Batch: WG1584189-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	85		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 12/16/21 14:43
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 12/16/21 13:32

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 16 Batch: WG1584239-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 12/16/21 08:21
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 16 Batch: WG1584334-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	112		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/16/21 11:47
Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 04 Batch: WG1584805-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	108		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05-11 Batch: WG1582904-3 WG1582904-4								
Methyl tert butyl ether	83		83		66-130	0		30
Benzene	106		102		70-130	4		30
1,2-Dichloroethane	88		88		70-130	0		30
Toluene	110		105		70-130	5		30
1,2-Dibromoethane	87		86		70-130	1		30
Ethylbenzene	111		108		70-130	3		30
p/m-Xylene	114		113		70-130	1		30
o-Xylene	110		110		70-130	0		30
Isopropylbenzene	117		116		70-130	1		30
1,3,5-Trimethylbenzene	113		112		70-130	1		30
1,2,4-Trimethylbenzene	109		108		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	91		91		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	89		90		70-130
Dibromofluoromethane	98		98		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02 Batch: WG1583937-3 WG1583937-4								
Methyl tert butyl ether	98		103		66-130	5		30
Benzene	95		93		70-130	2		30
1,2-Dichloroethane	95		97		70-130	2		30
Toluene	99		97		70-130	2		30
1,2-Dibromoethane	106		112		70-130	6		30
Ethylbenzene	100		98		70-130	2		30
p/m-Xylene	103		100		70-130	3		30
o-Xylene	102		100		70-130	2		30
Isopropylbenzene	104		99		70-130	5		30
1,3,5-Trimethylbenzene	104		100		70-130	4		30
1,2,4-Trimethylbenzene	105		101		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		99		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	95		95		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 12-15 Batch: WG1584189-3 WG1584189-4								
Methyl tert butyl ether	114		117		66-130	3		30
Benzene	103		106		70-130	3		30
1,2-Dichloroethane	86		88		70-130	2		30
Toluene	102		103		70-130	1		30
1,2-Dibromoethane	94		96		70-130	2		30
Ethylbenzene	101		103		70-130	2		30
p/m-Xylene	102		104		70-130	2		30
o-Xylene	99		101		70-130	2		30
Isopropylbenzene	106		107		70-130	1		30
1,3,5-Trimethylbenzene	103		104		70-130	1		30
1,2,4-Trimethylbenzene	102		103		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	87		87		70-130
Toluene-d8	102		100		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	85		85		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 16 Batch: WG1584239-2									
1,2-Dibromoethane	92		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 16 Batch: WG1584334-3 WG1584334-4								
Methyl tert butyl ether	95		100		63-130	5		20
Benzene	100		110		70-130	10		20
1,2-Dichloroethane	110		110		70-130	0		20
Toluene	100		110		70-130	10		20
Ethylbenzene	110		110		70-130	0		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	105		105		70-130	0		20
Isopropylbenzene	100		110		70-130	10		20
1,3,5-Trimethylbenzene	96		100		64-130	4		20
1,2,4-Trimethylbenzene	96		100		70-130	4		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	108		108		70-130
Toluene-d8	104		103		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	104		102		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 04 Batch: WG1584805-3 WG1584805-4								
Methyl tert butyl ether	102		100		66-130	2		30
Benzene	99		97		70-130	2		30
1,2-Dichloroethane	96		94		70-130	2		30
Toluene	100		99		70-130	1		30
1,2-Dibromoethane	104		105		70-130	1		30
Ethylbenzene	102		102		70-130	0		30
p/m-Xylene	106		104		70-130	2		30
o-Xylene	106		106		70-130	0		30
Isopropylbenzene	106		101		70-130	5		30
1,3,5-Trimethylbenzene	108		104		70-130	4		30
1,2,4-Trimethylbenzene	108		103		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	93		92		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	99		95		70-130
Dibromofluoromethane	97		97		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-01
 Client ID: PB-884-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 10:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 18:01
 Analyst: ALS
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	92		30-120
4-Terphenyl-d14	86		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-02
 Client ID: PB-884-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 10:45
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 18:25
 Analyst: ALS
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.043	J	mg/kg	0.10	0.018	1
Benzo(a)anthracene	0.030	J	mg/kg	0.10	0.020	1
Chrysene	0.021	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	91		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-03
 Client ID: PB-884-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 17:24
 Analyst: IM
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	73		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-04
 Client ID: PB-884-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 18:49
 Analyst: ALS
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	0.065	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.039	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.028	J	mg/kg	0.10	0.019	1
Chrysene	0.027	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-05
 Client ID: PB-884-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 12:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 17:48
 Analyst: IM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.025	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-06
 Client ID: PB-884-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 12:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 14:23
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	73		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-07
 Client ID: PB-885-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 02:08
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	84		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-08
 Client ID: PB-885-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 14:46
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.031	J	mg/kg	0.12	0.022	1
Chrysene	0.036	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.075	J	mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.054	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.048	J	mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	57		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-09
 Client ID: PB-885-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:45
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 15:10
 Analyst: SLR
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-10
 Client ID: PB-885-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 00:08
 Analyst: SLR
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	80		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-11
 Client ID: PB-885-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:10
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 15:34
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	65		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-12
 Client ID: PB-885-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 15:57
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.35	0.043	2
Fluorene	ND		mg/kg	0.35	0.034	2
Phenanthrene	ND		mg/kg	0.21	0.043	2
Anthracene	ND		mg/kg	0.21	0.069	2
Pyrene	ND		mg/kg	0.21	0.035	2
Benzo(a)anthracene	ND		mg/kg	0.21	0.040	2
Chrysene	ND		mg/kg	0.21	0.037	2
Benzo(b)fluoranthene	ND		mg/kg	0.21	0.060	2
Benzo(a)pyrene	ND		mg/kg	0.28	0.086	2
Benzo(ghi)perylene	ND		mg/kg	0.28	0.042	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	51		23-120
2-Fluorobiphenyl	50		30-120
4-Terphenyl-d14	45		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-13
 Client ID: PB-885-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 23:44
 Analyst: SLR
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-14
 Client ID: PB-885-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:40
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 02:56
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-15
 Client ID: PB-885-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:50
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 00:32
 Analyst: SLR
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.041	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.024	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-16
 Client ID: FB-211206
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 15:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/13/21 12:29
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 12/11/21 21:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	82		15-120
4-Terphenyl-d14	104		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 12/14/21 17:24
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 12/11/21 21:11

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 16 Batch: WG1582162-1					
Naphthalene	0.12		ug/l	0.10	0.05
Fluorene	0.01	J	ug/l	0.10	0.01
Phenanthrene	0.10		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	73		15-120
4-Terphenyl-d14	72		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 12/15/21 07:59
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-10 Batch: WG1582958-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	95		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 12/15/21 23:18
Analyst: SLR

Extraction Method: EPA 3546
Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 11-15 Batch: WG1583017-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	95		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 16 Batch: WG1582162-2 WG1582162-3								
Naphthalene	78		87		40-140	11		40
Fluorene	93		95		40-140	2		40
Phenanthrene	91		92		40-140	1		40
Anthracene	96		97		40-140	1		40
Pyrene	105		104		26-127	1		40
Benzo(a)anthracene	99		97		40-140	2		40
Chrysene	92		92		40-140	0		40
Benzo(b)fluoranthene	109		109		40-140	0		40
Benzo(a)pyrene	105		103		40-140	2		40
Benzo(ghi)perylene	90		88		40-140	2		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	68		77		23-120
2-Fluorobiphenyl	88		97		15-120
4-Terphenyl-d14	114		112		41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-10 Batch: WG1582958-2 WG1582958-3								
Naphthalene	80		79		40-140	1		50
Fluorene	88		88		40-140	0		50
Phenanthrene	83		84		40-140	1		50
Anthracene	85		84		40-140	1		50
Pyrene	86		86		35-142	0		50
Benzo(a)anthracene	87		86		40-140	1		50
Chrysene	81		81		40-140	0		50
Benzo(b)fluoranthene	82		81		40-140	1		50
Benzo(a)pyrene	74		74		40-140	0		50
Benzo(ghi)perylene	83		81		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	97		98		23-120
2-Fluorobiphenyl	83		84		30-120
4-Terphenyl-d14	88		86		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 11-15 Batch: WG1583017-2 WG1583017-3								
Naphthalene	84		75		40-140	11		50
Fluorene	88		80		40-140	10		50
Phenanthrene	87		78		40-140	11		50
Anthracene	86		79		40-140	8		50
Pyrene	86		76		35-142	12		50
Benzo(a)anthracene	93		82		40-140	13		50
Chrysene	89		80		40-140	11		50
Benzo(b)fluoranthene	95		88		40-140	8		50
Benzo(a)pyrene	90		81		40-140	11		50
Benzo(ghi)perylene	102		88		40-140	15		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		71		23-120
2-Fluorobiphenyl	90		78		30-120
4-Terphenyl-d14	91		81		18-120



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-01

Date Collected: 12/06/21 10:20

Client ID: PB-884-22-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.77		mg/kg	2.16	0.116	1	12/16/21 07:20	12/19/21 15:28	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-02

Date Collected: 12/06/21 10:45

Client ID: PB-884-07-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.61		mg/kg	2.04	0.110	1	12/16/21 07:20	12/19/21 15:33	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-03

Date Collected: 12/06/21 11:00

Client ID: PB-884-05-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.38		mg/kg	2.03	0.109	1	12/16/21 07:20	12/19/21 15:38	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-04

Date Collected: 12/06/21 11:30

Client ID: PB-884-06-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	89.0		mg/kg	9.96	0.534	5	12/16/21 07:20	12/19/21 17:55	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-05

Date Collected: 12/06/21 12:00

Client ID: PB-884-26-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	26.5		mg/kg	2.31	0.124	1	12/16/21 07:20	12/19/21 15:47	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-06

Date Collected: 12/06/21 12:20

Client ID: PB-884-10-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.58		mg/kg	1.99	0.107	1	12/16/21 07:20	12/19/21 15:52	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-07

Date Collected: 12/06/21 13:20

Client ID: PB-885-01-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	150		mg/kg	11.1	0.597	5	12/16/21 07:20	12/19/21 17:59	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-08

Date Collected: 12/06/21 13:30

Client ID: PB-885-02-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	43.9		mg/kg	11.3	0.604	5	12/16/21 07:20	12/19/21 18:04	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-09

Date Collected: 12/06/21 13:45

Client ID: PB-885-07-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	17.4		mg/kg	2.15	0.115	1	12/16/21 07:20	12/19/21 16:07	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-10

Date Collected: 12/06/21 14:00

Client ID: PB-885-16-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.76	J	mg/kg	11.4	0.613	5	12/16/21 07:20	12/19/21 18:21	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-11

Date Collected: 12/06/21 14:10

Client ID: PB-885-03-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.68		mg/kg	2.05	0.110	1	12/16/21 07:20	12/19/21 17:21	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-12

Date Collected: 12/06/21 14:20

Client ID: PB-885-08-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.07		mg/kg	2.01	0.108	1	12/16/21 07:20	12/19/21 17:26	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-13

Date Collected: 12/06/21 14:30

Client ID: PB-885-09-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.61		mg/kg	2.39	0.128	1	12/16/21 07:20	12/19/21 17:31	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-14

Date Collected: 12/06/21 14:40

Client ID: PB-885-10-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.04		mg/kg	2.03	0.109	1	12/16/21 07:20	12/19/21 17:35	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-15
 Client ID: PB-885-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:50
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.43		mg/kg	2.50	0.134	1	12/16/21 07:20	12/19/21 17:50	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-16

Date Collected: 12/06/21 15:00

Client ID: FB-211206

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/14/21 05:12	12/17/21 02:24	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 16 Batch: WG1582832-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	12/14/21 05:12	12/16/21 23:54	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-15 Batch: WG1583249-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	12/16/21 07:20	12/19/21 14:27	1,6010D	DL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 Batch: WG1582832-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-15 Batch: WG1583249-2 SRM Lot Number: D113-540								
Lead, Total	85		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 QC Batch ID: WG1582832-3 WG1582832-4 QC Sample: L2167147-05 Client ID: MS Sample												
Lead, Total	1.973	530	492.8	93		482.8	91		75-125	2		20
Total Metals - Mansfield Lab Associated sample(s): 01-15 QC Batch ID: WG1583249-3 QC Sample: L2166856-01 Client ID: MS Sample												
Lead, Total	39.1	182	173	74	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166871

Report Date: 12/21/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-15 QC Batch ID: WG1583249-4 QC Sample: L2166856-01 Client ID: DUP Sample						
Lead, Total	39.1	41.2	mg/kg	5		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-01

Date Collected: 12/06/21 10:20

Client ID: PB-884-22-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.1		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-02

Date Collected: 12/06/21 10:45

Client ID: PB-884-07-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-03
Client ID: PB-884-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:00
Date Received: 12/06/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-04

Date Collected: 12/06/21 11:30

Client ID: PB-884-06-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.5		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**SAMPLE RESULTS**

Lab ID: L2166871-05

Date Collected: 12/06/21 12:00

Client ID: PB-884-26-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-06

Date Collected: 12/06/21 12:20

Client ID: PB-884-10-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.4		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-07

Date Collected: 12/06/21 13:20

Client ID: PB-885-01-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**SAMPLE RESULTS**

Lab ID: L2166871-08

Date Collected: 12/06/21 13:30

Client ID: PB-885-02-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-09

Date Collected: 12/06/21 13:45

Client ID: PB-885-07-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.1		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**SAMPLE RESULTS**

Lab ID: L2166871-10

Date Collected: 12/06/21 14:00

Client ID: PB-885-16-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-11

Date Collected: 12/06/21 14:10

Client ID: PB-885-03-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.9		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-12
Client ID: PB-885-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:20
Date Received: 12/06/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.7		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-13
Client ID: PB-885-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:30
Date Received: 12/06/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.8		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-14
 Client ID: PB-885-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:40
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.1		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**SAMPLE RESULTS**

Lab ID: L2166871-15

Date Collected: 12/06/21 14:50

Client ID: PB-885-11-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.7		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166871

Report Date: 12/21/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-15 QC Batch ID: WG1580494-1 QC Sample: L2166871-01 Client ID: PB-884-22-SS01						
Solids, Total	91.1	89.4	%	2		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166871-01A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-01B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-01C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-01D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-01F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-02A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-02B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-02C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-02D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-02F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-03A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-03B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-03C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-03D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-03F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-04A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-04B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-04C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166871-04D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-04F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-05A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-05B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-05C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-05D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-05F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-06A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-06B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-06C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-06D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-06F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-07A	Vial MeOH preserved	C	NA		2.9	Y	Absent		PA-8260HLW(14)
L2166871-07B	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-07C	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-07D	Plastic 2oz unpreserved for TS	C	NA		2.9	Y	Absent		TS(7)
L2166871-07E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.9	Y	Absent		PB-TI(180)
L2166871-07F	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PA-PAH(14)
L2166871-08A	Vial MeOH preserved	C	NA		2.9	Y	Absent		PA-8260HLW(14)
L2166871-08B	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-08C	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-08D	Plastic 2oz unpreserved for TS	C	NA		2.9	Y	Absent		TS(7)
L2166871-08E	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PB-TI(180)
L2166871-08F	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PA-PAH(14)
L2166871-09A	Vial MeOH preserved	C	NA		2.9	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166871-09B	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-09C	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-09D	Plastic 2oz unpreserved for TS	C	NA		2.9	Y	Absent		TS(7)
L2166871-09E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.9	Y	Absent		PB-TI(180)
L2166871-09F	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PA-PAH(14)
L2166871-10A	Vial MeOH preserved	C	NA		2.9	Y	Absent		PA-8260HLW(14)
L2166871-10B	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-10C	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-10D	Plastic 2oz unpreserved for TS	C	NA		2.9	Y	Absent		TS(7)
L2166871-10E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.9	Y	Absent		PB-TI(180)
L2166871-10F	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PA-PAH(14)
L2166871-11A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-11B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-11C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-11D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-11F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-12A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-12B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-12C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-12D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-12F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-13A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-13B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-13C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-13D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166871-13F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-14A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-14B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-14C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-14D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-14F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-15A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-15B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-15C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-15D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-15F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-16A	Vial HCl preserved	C	NA		2.9	Y	Absent		PA-8260(14)
L2166871-16B	Vial HCl preserved	C	NA		2.9	Y	Absent		PA-8260(14)
L2166871-16C	Vial HCl preserved	C	NA		2.9	Y	Absent		8011(14)
L2166871-16D	Plastic 60ml unpreserved	C	7	7	2.9	Y	Absent		ARCHIVE()
L2166871-16F	Plastic 250ml HNO3 preserved	C	<2	<2	2.9	Y	Absent		PB-6020T-PPB(180)
L2166871-16G	Amber 250ml unpreserved	C	7	7	2.9	Y	Absent		PA-PAHSIM-LVI(7)
L2166871-16H	Amber 250ml unpreserved	C	7	7	2.9	Y	Absent		PA-PAHSIM-LVI(7)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2



Westborough, MA
 TEL: 508-898-9220
 FAX: 508-898-9193

Mansfield, MA
 TEL: 508-822-9300
 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
 Address: 2127 Hamilton Avenue
 Trenton, NJ 08619
 Phone: 215-901-4974

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Fax: Standard Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 12/6/10

ALPHA Job #: 12106871

Report Information Data Deliverables Billing Information

FAX EMAIL Same as Client info PO #: 3894
 ADEx Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist	SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed Preservation <input type="checkbox"/> Lab to do <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES
		Date	Time															
G6871-01	PB-881-22-5501	12/6	1020	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-02	PB-881-07-5501		1045	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-03	PB-884-05-5501		1100	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-04	PB-884-06-5501		1130	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-05	PB-884-26-5501		1200	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-06	PB-884-10-5501		1220	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-07	PB-885-01-5501		1320	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-08	PB-885-02-5501		1330	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-09	PB-885-07-5501		1345	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-10	PB-885-16-5501		1406	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6


Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>William Schmidt</i>	12/6/10 10:30	<i>Paul Mazzella</i>	12/6/10 10:25
<i>Paul Mazzella</i>	12/7/10 10:30	<i>Paul Mazzella</i>	12/7/10 10:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

CHAIN OF CUSTODY

PAGE 1 OF 2



Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3285

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:
 Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: _____

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Report Information

Date Rec'd in Lab: 12/7/21

ALPHA Job #: 12164821

Report Information Data Deliverables Billing Information

FAX EMAIL Same as Client info PO #: 3894

ADEx Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										SAMPLE HANDLING	TOTAL # BOTTLES		
		Date	Time			PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylens Glycol			VOC portion of PADEP Shortlist	
66871-11	PB-885-03-SS-1	12/6	1410	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0
-12	PB-885-08-SS-1	↓	1420	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
-13	PB-885-09-SS-1		1430	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
-14	PB-885-10-SS-1		1440	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
-15	PB-885-11-SS-1		1450	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
-16	FB-211206		1400	W	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	7
							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Container Type G G G - - - - - - - -

Preservative F A A - - - - - - - -

Relinquished By: *[Signature]* Date/Time: 12/6/21 17:30

Received By: *[Signature]* Date/Time: 12/6/21 16:25

Paul Mazzella 12/7/21 0132

FORM NO. 01-01(1/01)
(Rev. 5-JAN-10)

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

PADEP Short List Analytical List:

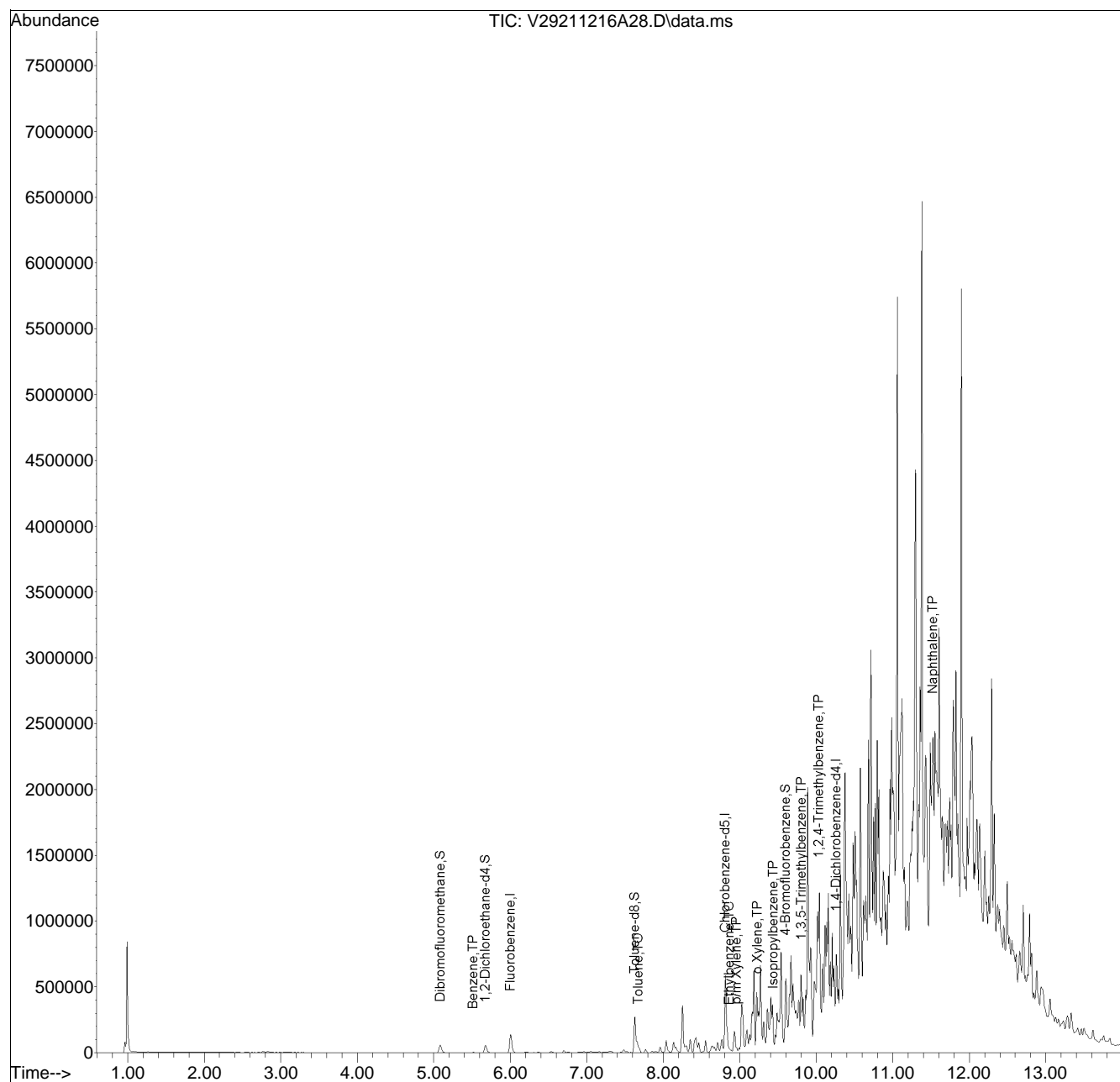
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
6. Waste Oil – benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, lead

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2021\211216A\
 Data File : V29211216A28.D
 Acq On : 16 Dec 2021 07:44 pm
 Operator : VOA129:AJK
 Sample : L2166871-04,31,5.79,5,,B
 Misc : WG1584805,ICAL18564
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Dec 17 09:57:51 2021
 Quant Method : I:\VOLATILES\VOA129\2021\211216A\V129_211213N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Tue Dec 14 10:56:36 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list16A\V29211216A02.D•





ANALYTICAL REPORT

Lab Number:	L2167219
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	12/22/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2167219-01	PB-885-22-SS01	SOIL	PHILADELPHIA, PA	12/07/21 09:10	12/07/21
L2167219-02	PB-885-23-SS01	SOIL	PHILADELPHIA, PA	12/07/21 09:30	12/07/21
L2167219-03	PB-885-26-SS01	SOIL	PHILADELPHIA, PA	12/07/21 09:45	12/07/21
L2167219-04	PB-885-21-SS01	SOIL	PHILADELPHIA, PA	12/07/21 10:10	12/07/21
L2167219-05	PB-885-06-SS01	SOIL	PHILADELPHIA, PA	12/07/21 10:40	12/07/21
L2167219-06	PB-253-01-SS01	SOIL	PHILADELPHIA, PA	12/07/21 12:30	12/07/21
L2167219-07	PB-253-02-SS01	SOIL	PHILADELPHIA, PA	12/07/21 13:00	12/07/21
L2167219-08	PB-253-03-SS01	SOIL	PHILADELPHIA, PA	12/07/21 13:10	12/07/21
L2167219-09	PB-253-04-SS01	SOIL	PHILADELPHIA, PA	12/07/21 13:40	12/07/21
L2167219-10	PB-253-05-SS01	SOIL	PHILADELPHIA, PA	12/07/21 14:00	12/07/21
L2167219-11	PB-253-06-SS01	SOIL	PHILADELPHIA, PA	12/07/21 14:10	12/07/21
L2167219-12	PB-253-07-SS01	SOIL	PHILADELPHIA, PA	12/07/21 14:20	12/07/21
L2167219-13	PB-253-08-SS01	SOIL	PHILADELPHIA, PA	12/07/21 14:30	12/07/21
L2167219-14	PB-253-09-SS01	SOIL	PHILADELPHIA, PA	12/07/21 14:40	12/07/21
L2167219-15	PB-253-10-SS01	SOIL	PHILADELPHIA, PA	12/07/21 14:50	12/07/21
L2167219-16	DUP-23	SOIL	PHILADELPHIA, PA	12/07/21 00:00	12/07/21
L2167219-17	FB-211207	WATER	PHILADELPHIA, PA	12/07/21 15:00	12/07/21
L2167219-18	TB-211207	WATER	PHILADELPHIA, PA	12/07/21 00:00	12/07/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2167219-06: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies.

L2167219-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (144%) due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167219-10: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (310%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167219-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (163%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167219-14: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167219-15 and -16: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2167219-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (158%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Case Narrative (continued)

L2167219-16: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2167219-16D: The sample has elevated detection limits due to the dilution required by the sample matrix.

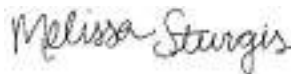
L2167219-16D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%) and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

Semivolatile Organics by SIM

The WG1582162-1 Method Blank, associated with L2167219-17, has concentrations above the reporting limits for Naphthalene and Phenanthrene. Since the associated sample concentrations are either greater than 10x the blank concentrations or non-detect to the RL for these target analytes, no corrective action is required. Any results detected below the reporting limit are qualified with a "B".

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 12/22/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-01
 Client ID: PB-885-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 09:10
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/17/21 07:49
 Analyst: MV
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-02
 Client ID: PB-885-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 09:30
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/17/21 13:56
 Analyst: MKS
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-03
 Client ID: PB-885-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 09:45
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/17/21 14:22
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-04
 Client ID: PB-885-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 10:10
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/17/21 14:48
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00023	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-05
 Client ID: PB-885-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 10:40
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 16:05
 Analyst: AJK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-06
 Client ID: PB-253-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 12:30
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 13:07
 Analyst: MV
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00083	J	mg/kg	0.0023	0.00023	1
Benzene	0.84	E	mg/kg	0.00056	0.00019	1
Toluene	0.11		mg/kg	0.0011	0.00061	1
Ethylbenzene	1.1	E	mg/kg	0.0011	0.00016	1
Isopropylbenzene	0.086		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.14		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.93	E	mg/kg	0.0023	0.00038	1
Naphthalene	0.071		mg/kg	0.0045	0.00074	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	81		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-06 D
 Client ID: PB-253-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 12:30
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/18/21 21:25
 Analyst: MKS
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.26	0.026	2
Benzene	3.5		mg/kg	0.065	0.022	2
Toluene	0.70		mg/kg	0.13	0.071	2
Ethylbenzene	9.4		mg/kg	0.13	0.018	2
Isopropylbenzene	1.0		mg/kg	0.13	0.014	2
1,3,5-Trimethylbenzene	1.9		mg/kg	0.26	0.025	2
1,2,4-Trimethylbenzene	14.		mg/kg	0.26	0.043	2
Naphthalene	0.75		mg/kg	0.52	0.084	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	91		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-07
 Client ID: PB-253-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 13:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 17:54
 Analyst: MV
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.15	0.015	1
Benzene	0.53		mg/kg	0.038	0.012	1
Toluene	0.53		mg/kg	0.075	0.041	1
Ethylbenzene	6.4		mg/kg	0.075	0.010	1
Isopropylbenzene	2.3		mg/kg	0.075	0.0082	1
1,3,5-Trimethylbenzene	12.		mg/kg	0.15	0.014	1
1,2,4-Trimethylbenzene	31.	E	mg/kg	0.15	0.025	1
Naphthalene	29.	E	mg/kg	0.30	0.049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	144	Q	70-130
Dibromofluoromethane	113		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-07 D
 Client ID: PB-253-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 13:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/18/21 21:48
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
1,2,4-Trimethylbenzene	34.		mg/kg	1.5	0.25	10
Naphthalene	48.		mg/kg	3.0	0.49	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-08
 Client ID: PB-253-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 13:10
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/18/21 19:55
 Analyst: MKS
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
Toluene	ND		mg/kg	0.00097	0.00052	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	0.00034	J	mg/kg	0.0019	0.00032	1
Naphthalene	ND		mg/kg	0.0039	0.00063	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	114		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-09
 Client ID: PB-253-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 13:40
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/18/21 20:17
 Analyst: MKS
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
Toluene	ND		mg/kg	0.00085	0.00046	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1
Naphthalene	ND		mg/kg	0.0034	0.00055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-10
 Client ID: PB-253-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/21/21 15:10
 Analyst: KJD
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00056	0.00019	1
Toluene	ND		mg/kg	0.0011	0.00061	1
Ethylbenzene	0.0084		mg/kg	0.0011	0.00016	1
Isopropylbenzene	0.043		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.015		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.19		mg/kg	0.0023	0.00038	1
Naphthalene	0.019		mg/kg	0.0045	0.00073	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	310	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-11
 Client ID: PB-253-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:10
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/18/21 20:40
 Analyst: MKS
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
Toluene	ND		mg/kg	0.0011	0.00061	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1
Naphthalene	ND		mg/kg	0.0045	0.00074	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-12
 Client ID: PB-253-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:20
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/18/21 21:03
 Analyst: MKS
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.00047	J	mg/kg	0.00064	0.00021	1
Toluene	ND		mg/kg	0.0013	0.00070	1
Ethylbenzene	0.0020		mg/kg	0.0013	0.00018	1
Isopropylbenzene	0.0014		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.0023	J	mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	0.0015	J	mg/kg	0.0026	0.00043	1
Naphthalene	0.038		mg/kg	0.0051	0.00084	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-13
 Client ID: PB-253-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:30
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 18:17
 Analyst: MV
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.014	1
Benzene	ND		mg/kg	0.034	0.011	1
Toluene	ND		mg/kg	0.067	0.036	1
Ethylbenzene	0.12		mg/kg	0.067	0.0095	1
Isopropylbenzene	0.38		mg/kg	0.067	0.0073	1
1,3,5-Trimethylbenzene	1.9		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	4.4		mg/kg	0.13	0.022	1
Naphthalene	1.9		mg/kg	0.27	0.044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	163	Q	70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-14
 Client ID: PB-253-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:40
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 12:43
 Analyst: MV
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00069	0.00023	1
Toluene	ND		mg/kg	0.0014	0.00075	1
Ethylbenzene	0.0014		mg/kg	0.0014	0.00019	1
Isopropylbenzene	0.015		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	0.0052		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	0.010		mg/kg	0.0028	0.00046	1
Naphthalene	0.014		mg/kg	0.0055	0.00090	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-15
 Client ID: PB-253-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:50
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 18:40
 Analyst: MV
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
Toluene	ND		mg/kg	0.065	0.035	1
Ethylbenzene	0.033	J	mg/kg	0.065	0.0092	1
Isopropylbenzene	2.4		mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	0.033	J	mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	0.18		mg/kg	0.13	0.022	1
Naphthalene	0.91		mg/kg	0.26	0.042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	158	Q	70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-16
 Client ID: DUP-23
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 00:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 19:02
 Analyst: MV
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.014	1
Benzene	ND		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.067	0.017	1
Toluene	ND		mg/kg	0.067	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	0.016	J	mg/kg	0.067	0.0095	1
p/m-Xylene	ND		mg/kg	0.13	0.038	1
o-Xylene	0.036	J	mg/kg	0.067	0.020	1
Xylenes, Total	0.036	J	mg/kg	0.067	0.020	1
Isopropylbenzene	2.0		mg/kg	0.067	0.0073	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	0.054	J	mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-17
 Client ID: FB-211207
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 15:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/19/21 14:11
 Analyst: GT

Extraction Method: EPA 8011
 Extraction Date: 12/19/21 09:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-17
 Client ID: FB-211207
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 15:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/17/21 09:57
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-18
 Client ID: TB-211207
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 00:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/19/21 14:20
 Analyst: GT

Extraction Method: EPA 8011
 Extraction Date: 12/19/21 09:20

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-18
 Client ID: TB-211207
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 00:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/22/21 11:57
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	114		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/17/21 09:33
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 17 Batch: WG1584911-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	105		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/17/21 06:57
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-04 Batch: WG1585060-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 12/19/21 11:13
Analyst: GT

Extraction Method: EPA 8011
Extraction Date: 12/19/21 09:20

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 17-18 Batch: WG1585167-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/18/21 17:40
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 06-07 Batch: WG1585263-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
Toluene	ND		mg/kg	0.050	0.027
Ethylbenzene	ND		mg/kg	0.050	0.0070
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017
Naphthalene	ND		mg/kg	0.20	0.032

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 12/18/21 17:40
 Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 08-09,11-12 Batch: WG1585264-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
Toluene	ND		mg/kg	0.0010	0.00054
Ethylbenzene	ND		mg/kg	0.0010	0.00014
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033
Naphthalene	ND		mg/kg	0.0040	0.00065

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	108		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/20/21 09:14
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 07,13,15-16 Batch: WG1585981-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017
Naphthalene	ND		mg/kg	0.20	0.032

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	110		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/19/21 11:53
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1586009-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/20/21 09:21
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 06,14 Batch: WG1586011-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
Toluene	ND		mg/kg	0.0010	0.00054
Ethylbenzene	ND		mg/kg	0.0010	0.00014
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033
Naphthalene	ND		mg/kg	0.0040	0.00065

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/21/21 07:14
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 10 Batch: WG1586225-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
Toluene	ND		mg/kg	0.0010	0.00054
Ethylbenzene	ND		mg/kg	0.0010	0.00014
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033
Naphthalene	ND		mg/kg	0.0040	0.00065

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/22/21 08:29
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 18 Batch: WG1586758-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	112		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 17 Batch: WG1584911-3 WG1584911-4								
Methyl tert butyl ether	93		98		63-130	5		20
Benzene	100		100		70-130	0		20
1,2-Dichloroethane	99		100		70-130	1		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	100		100		70-130	0		20
o-Xylene	100		100		70-130	0		20
Isopropylbenzene	100		100		70-130	0		20
1,3,5-Trimethylbenzene	100		100		64-130	0		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	103		99		70-130
Dibromofluoromethane	99		99		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-04 Batch: WG1585060-3 WG1585060-4								
Methyl tert butyl ether	78		93		66-130	18		30
Benzene	101		93		70-130	8		30
1,2-Dichloroethane	85		83		70-130	2		30
Toluene	103		94		70-130	9		30
1,2-Dibromoethane	89		86		70-130	3		30
Ethylbenzene	108		97		70-130	11		30
p/m-Xylene	110		99		70-130	11		30
o-Xylene	108		99		70-130	9		30
Isopropylbenzene	106		95		70-130	11		30
1,3,5-Trimethylbenzene	106		95		70-130	11		30
1,2,4-Trimethylbenzene	105		96		70-130	9		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		95		70-130
Toluene-d8	106		103		70-130
4-Bromofluorobenzene	97		96		70-130
Dibromofluoromethane	95		97		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 17-18 Batch: WG1585167-2									
1,2-Dibromoethane	106		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 06-07 Batch: WG1585263-3 WG1585263-4								
Methyl tert butyl ether	97		93		66-130	4		30
Benzene	88		90		70-130	2		30
Toluene	84		86		70-130	2		30
Ethylbenzene	87		89		70-130	2		30
Isopropylbenzene	83		84		70-130	1		30
1,3,5-Trimethylbenzene	83		84		70-130	1		30
1,2,4-Trimethylbenzene	83		84		70-130	1		30
Naphthalene	82		78		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	114		112		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	109		110		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09,11-12 Batch: WG1585264-3 WG1585264-4								
Methyl tert butyl ether	97		93		66-130	4		30
Benzene	88		90		70-130	2		30
Toluene	84		86		70-130	2		30
Ethylbenzene	87		89		70-130	2		30
Isopropylbenzene	83		84		70-130	1		30
1,3,5-Trimethylbenzene	83		84		70-130	1		30
1,2,4-Trimethylbenzene	83		84		70-130	1		30
Naphthalene	82		78		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	114		112		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	109		110		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 07,13,15-16 Batch: WG1585981-3 WG1585981-4								
Methyl tert butyl ether	96		102		66-130	6		30
Benzene	86		92		70-130	7		30
1,2-Dichloroethane	95		104		70-130	9		30
Toluene	84		88		70-130	5		30
1,2-Dibromoethane	96		99		70-130	3		30
Ethylbenzene	87		92		70-130	6		30
p/m-Xylene	89		95		70-130	7		30
o-Xylene	91		99		70-130	8		30
Isopropylbenzene	87		86		70-130	1		30
1,3,5-Trimethylbenzene	86		86		70-130	0		30
1,2,4-Trimethylbenzene	86		86		70-130	0		30
Naphthalene	82		84		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	108		110		70-130
Toluene-d8	102		99		70-130
4-Bromofluorobenzene	103		98		70-130
Dibromofluoromethane	104		108		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1586009-3 WG1586009-4								
Methyl tert butyl ether	103		103		66-130	0		30
Benzene	106		104		70-130	2		30
1,2-Dichloroethane	98		98		70-130	0		30
Toluene	105		103		70-130	2		30
1,2-Dibromoethane	99		100		70-130	1		30
Ethylbenzene	108		106		70-130	2		30
p/m-Xylene	116		113		70-130	3		30
o-Xylene	114		112		70-130	2		30
Isopropylbenzene	112		109		70-130	3		30
1,3,5-Trimethylbenzene	113		110		70-130	3		30
1,2,4-Trimethylbenzene	112		110		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	94		96		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	101		101		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 06,14 Batch: WG1586011-3 WG1586011-4								
Methyl tert butyl ether	106		106		66-130	0		30
Benzene	110		108		70-130	2		30
Toluene	108		108		70-130	0		30
Ethylbenzene	111		111		70-130	0		30
Isopropylbenzene	114		111		70-130	3		30
1,3,5-Trimethylbenzene	115		113		70-130	2		30
1,2,4-Trimethylbenzene	116		114		70-130	2		30
Naphthalene	101		106		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	94		96		70-130
Dibromofluoromethane	102		103		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 10 Batch: WG1586225-3 WG1586225-4								
Methyl tert butyl ether	105		106		66-130	1		30
Benzene	106		105		70-130	1		30
Toluene	104		105		70-130	1		30
Ethylbenzene	107		108		70-130	1		30
Isopropylbenzene	110		110		70-130	0		30
1,3,5-Trimethylbenzene	110		112		70-130	2		30
1,2,4-Trimethylbenzene	111		112		70-130	1		30
Naphthalene	108		111		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	94		96		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		98		70-130
Dibromofluoromethane	100		101		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 18 Batch: WG1586758-3 WG1586758-4								
Methyl tert butyl ether	90		100		63-130	11		20
Benzene	100		100		70-130	0		20
1,2-Dichloroethane	110		110		70-130	0		20
Toluene	100		110		70-130	10		20
Ethylbenzene	100		110		70-130	10		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	100		105		70-130	5		20
Isopropylbenzene	100		110		70-130	10		20
1,3,5-Trimethylbenzene	94		98		64-130	4		20
1,2,4-Trimethylbenzene	95		99		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	109		111		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	103		103		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-01
 Client ID: PB-885-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 09:10
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 02:17
 Analyst: JG
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 08:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	41		23-120
2-Fluorobiphenyl	37		30-120
4-Terphenyl-d14	37		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-02
 Client ID: PB-885-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 09:30
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 02:41
 Analyst: JG
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 08:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-03
 Client ID: PB-885-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 09:45
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 03:05
 Analyst: JG
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 08:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-04
 Client ID: PB-885-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 10:10
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 03:29
 Analyst: JG
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 08:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	57		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-05
 Client ID: PB-885-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 10:40
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 03:54
 Analyst: JG
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 08:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	68		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-16 D
 Client ID: DUP-23
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 00:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 21:49
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 08:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	4.0	0.49	20
Fluorene	14.		mg/kg	4.0	0.39	20
Phenanthrene	29.		mg/kg	2.4	0.49	20
Anthracene	3.7		mg/kg	2.4	0.78	20
Pyrene	2.9		mg/kg	2.4	0.40	20
Benzo(a)anthracene	ND		mg/kg	2.4	0.45	20
Chrysene	ND		mg/kg	2.4	0.42	20
Benzo(b)fluoranthene	ND		mg/kg	2.4	0.68	20
Benzo(a)pyrene	ND		mg/kg	3.2	0.98	20
Benzo(ghi)perylene	ND		mg/kg	3.2	0.47	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	0	Q	23-120
2-Fluorobiphenyl	0	Q	30-120
4-Terphenyl-d14	0	Q	18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-17
 Client ID: FB-211207
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 15:00
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/14/21 13:31
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 12/12/21 07:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	67		15-120
4-Terphenyl-d14	68		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 12/14/21 17:24
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 12/11/21 21:11

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 17 Batch: WG1582162-1					
Naphthalene	0.12		ug/l	0.10	0.05
Fluorene	0.01	J	ug/l	0.10	0.01
Phenanthrene	0.10		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	73		15-120
4-Terphenyl-d14	72		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 12/19/21 23:25
Analyst: SLR

Extraction Method: EPA 3546
Extraction Date: 12/18/21 08:16

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-05,16 Batch: WG1584941-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	65		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	69		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 17 Batch: WG1582162-2 WG1582162-3								
Naphthalene	78		87		40-140	11		40
Fluorene	93		95		40-140	2		40
Phenanthrene	91		92		40-140	1		40
Anthracene	96		97		40-140	1		40
Pyrene	105		104		26-127	1		40
Benzo(a)anthracene	99		97		40-140	2		40
Chrysene	92		92		40-140	0		40
Benzo(b)fluoranthene	109		109		40-140	0		40
Benzo(a)pyrene	105		103		40-140	2		40
Benzo(ghi)perylene	90		88		40-140	2		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	68		77		23-120
2-Fluorobiphenyl	88		97		15-120
4-Terphenyl-d14	114		112		41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-05,16 Batch: WG1584941-2 WG1584941-3								
Naphthalene	60		75		40-140	22		50
Fluorene	62		74		40-140	18		50
Phenanthrene	60		71		40-140	17		50
Anthracene	59		73		40-140	21		50
Pyrene	61		73		35-142	18		50
Benzo(a)anthracene	64		76		40-140	17		50
Chrysene	64		76		40-140	17		50
Benzo(b)fluoranthene	67		79		40-140	16		50
Benzo(a)pyrene	63		71		40-140	12		50
Benzo(ghi)perylene	68		83		40-140	20		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	61		74		23-120
2-Fluorobiphenyl	63		76		30-120
4-Terphenyl-d14	63		75		18-120



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-01

Date Collected: 12/07/21 09:10

Client ID: PB-885-22-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.76		mg/kg	4.73	0.254	2	12/17/21 19:37	12/22/21 13:59	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-02

Date Collected: 12/07/21 09:30

Client ID: PB-885-23-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.80		mg/kg	2.08	0.111	1	12/17/21 19:37	12/21/21 22:55	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-03

Date Collected: 12/07/21 09:45

Client ID: PB-885-26-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.28		mg/kg	2.05	0.110	1	12/17/21 19:37	12/21/21 23:00	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-04
 Client ID: PB-885-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 10:10
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.11		mg/kg	2.06	0.110	1	12/17/21 19:37	12/21/21 23:05	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-05
 Client ID: PB-885-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 10:40
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.41		mg/kg	2.07	0.111	1	12/17/21 19:37	12/21/21 23:10	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-16

Date Collected: 12/07/21 00:00

Client ID: DUP-23

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.69		mg/kg	2.29	0.123	1	12/17/21 19:37	12/21/21 23:34	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-17

Date Collected: 12/07/21 15:00

Client ID: FB-211207

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/14/21 05:12	12/17/21 02:28	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 17 Batch: WG1582832-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	12/14/21 05:12	12/16/21 23:54	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-05,16 Batch: WG1584723-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	12/17/21 19:37	12/21/21 20:33	1,6010D	DL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 17 Batch: WG1582832-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-05,16 Batch: WG1584723-2 SRM Lot Number: D113-540								
Lead, Total	92		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 17 QC Batch ID: WG1582832-3 WG1582832-4 QC Sample: L2167147-05 Client ID: MS Sample												
Lead, Total	1.973	530	492.8	93		482.8	91		75-125	2		20
Total Metals - Mansfield Lab Associated sample(s): 01-05,16 QC Batch ID: WG1584723-3 QC Sample: L2167070-01 Client ID: MS Sample												
Lead, Total	10.2	48	49.6	82		-	-		75-125	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2167219

Report Date: 12/22/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-05,16 QC Batch ID: WG1584723-4 QC Sample: L2167070-01 Client ID: DUP Sample						
Lead, Total	10.2	10.3	mg/kg	1		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-01
Client ID: PB-885-22-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 09:10
Date Received: 12/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.0		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167219**Project Number:** 200.00135.005.03**Report Date:** 12/22/21**SAMPLE RESULTS**

Lab ID: L2167219-02

Date Collected: 12/07/21 09:30

Client ID: PB-885-23-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.0		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167219**Project Number:** 200.00135.005.03**Report Date:** 12/22/21**SAMPLE RESULTS**

Lab ID: L2167219-03

Date Collected: 12/07/21 09:45

Client ID: PB-885-26-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.1		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-04

Date Collected: 12/07/21 10:10

Client ID: PB-885-21-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167219**Project Number:** 200.00135.005.03**Report Date:** 12/22/21**SAMPLE RESULTS**

Lab ID: L2167219-05

Date Collected: 12/07/21 10:40

Client ID: PB-885-06-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.7		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-06
 Client ID: PB-253-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 12:30
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167219**Project Number:** 200.00135.005.03**Report Date:** 12/22/21**SAMPLE RESULTS**

Lab ID: L2167219-07

Date Collected: 12/07/21 13:00

Client ID: PB-253-02-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-08
 Client ID: PB-253-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 13:10
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.0		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-09
 Client ID: PB-253-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 13:40
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.0		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-10
Client ID: PB-253-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:00
Date Received: 12/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.3		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-11
 Client ID: PB-253-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:10
 Date Received: 12/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.1		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-12
Client ID: PB-253-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:20
Date Received: 12/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-13

Date Collected: 12/07/21 14:30

Client ID: PB-253-08-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.7		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-14

Date Collected: 12/07/21 14:40

Client ID: PB-253-09-SS01

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.9		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

SAMPLE RESULTS

Lab ID: L2167219-15
Client ID: PB-253-10-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/07/21 14:50
Date Received: 12/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167219**Project Number:** 200.00135.005.03**Report Date:** 12/22/21**SAMPLE RESULTS**

Lab ID: L2167219-16

Date Collected: 12/07/21 00:00

Client ID: DUP-23

Date Received: 12/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.7		%	0.100	NA	1	-	12/08/21 11:31	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2167219

Report Date: 12/22/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-16 QC Batch ID: WG1580638-1 QC Sample: L2167219-01 Client ID: PB-885-22-SS01						
Solids, Total	80.0	79.4	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167219**Project Number:** 200.00135.005.03**Report Date:** 12/22/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167219-01A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2167219-01B	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-01C	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-01D	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		TS(7)
L2167219-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2167219-01F	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		PA-PAH(14)
L2167219-02A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2167219-02B	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-02C	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-02D	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		TS(7)
L2167219-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2167219-02F	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		PA-PAH(14)
L2167219-03A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2167219-03B	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-03C	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-03D	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		TS(7)
L2167219-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2167219-03F	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		PA-PAH(14)
L2167219-04A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2167219-04B	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-04C	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-04D	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167219**Project Number:** 200.00135.005.03**Report Date:** 12/22/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167219-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2167219-04F	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		PA-PAH(14)
L2167219-05A	Vial MeOH preserved	A	NA		2.3	Y	Absent		PA-8260HLW(14)
L2167219-05B	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-05C	Vial water preserved	A	NA		2.3	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-05D	Plastic 2oz unpreserved for TS	A	NA		2.3	Y	Absent		TS(7)
L2167219-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.3	Y	Absent		PB-TI(180)
L2167219-05F	Glass 120ml/4oz unpreserved	A	NA		2.3	Y	Absent		PA-PAH(14)
L2167219-06A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2167219-06B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260H(14),PA-8260HLW(14)
L2167219-06C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260H(14),PA-8260HLW(14)
L2167219-06D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-07A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-07B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-07C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-07D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-08A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-08B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-08C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-08D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-09A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-09B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-09C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-09D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-10A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-10B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-10C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-10D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167219**Project Number:** 200.00135.005.03**Report Date:** 12/22/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167219-11A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-11B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-11C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-11D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-12A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-12B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-12C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-12D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-13A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-13B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-13C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-13D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-14A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-14B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-14C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-14D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-15A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-15B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-15C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-15D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-16A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167219-16B	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-16C	Vial water preserved	B	NA		2.1	Y	Absent	08-DEC-21 11:08	PA-8260HLW(14)
L2167219-16D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167219-16E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2167219-16F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2167219-17A	Vial HCl preserved	A	NA		2.3	Y	Absent		PA-8260(14)
L2167219-17B	Vial HCl preserved	A	NA		2.3	Y	Absent		PA-8260(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167219**Project Number:** 200.00135.005.03**Report Date:** 12/22/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167219-17C	Vial HCl preserved	A	NA		2.3	Y	Absent		8011(14)
L2167219-17D	Plastic 500ml HNO3 preserved	A	<2	<2	2.3	Y	Absent		PB-6020T-PPB(180)
L2167219-17E	Amber 250ml unpreserved	A	7	7	2.3	Y	Absent		PA-PAHSIM-LVI(7)
L2167219-17F	Amber 250ml unpreserved	A	7	7	2.3	Y	Absent		PA-PAHSIM-LVI(7)
L2167219-17G	Plastic 60ml unpreserved	A	NA		2.3	Y	Absent		ARCHIVE()
L2167219-18A	Vial HCl preserved	A	NA		2.3	Y	Absent		PA-8260(14)
L2167219-18B	Vial HCl preserved	A	NA		2.3	Y	Absent		PA-8260(14)
L2167219-18C	Vial Na2S2O3 preserved	A	NA		2.3	Y	Absent		8011(14)
L2167219-18D	Vial Na2S2O3 preserved	A	NA		2.3	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167219
Report Date: 12/22/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167219

Project Number: 200.00135.005.03

Report Date: 12/22/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 2

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3285

Client Information

Client: Ransom Consulting, LLC
 Address: 2127 Hamilton Avenue
 Trenton, NJ 08619
 Phone: 215-901-4974

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and ijeray@hilcoglobal.com

Date Rec'd in Lab: 12/8/21

ALPHA Job #: L2167219

Report Information Data Deliverables Billing Information

FAX EMAIL
 ADEX Add'l Deliverables

Same as Client Info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist	SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed Preservation <input type="checkbox"/> Lab to do <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES
		Date	Time															
67219-01	PB-885-22-SS01	12/7	0900	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		8
-02	PB-885-23-SS01		0930	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-03	PB-885-26-SS01		0945	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-04	PB-885-21-SS01		1010	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-05	PB-885-06-SS01		1040	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-06	PE-253-01-SS01		1230	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-07	PB-253-02-SS01		1300	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-08	PB-253-03-SS01		1310	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-09	PB-253-04-SS01		1340	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-10	PB-253-05-SS01		1400	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: [Signature] Date/Time: 12/7/21 1:15
 Received By: [Signature] Date/Time: 12/7/21 16:25
 [Signature] Date/Time: 12/7/21 17:50
 [Signature] Date/Time: 12/7/21
 [Signature] Date/Time: 12/8/21
 [Signature] Date/Time: 12/8/21 20:50
 [Signature] Date/Time: 12/8/21 08:00
 [Signature] Date/Time: 12/8/21 09:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



CHAIN OF CUSTODY

PAGE 2 OF 2

Date Rec'd in Lab: 12/8/21 ALPHA Job #: L2167219

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery

Client Information

Client: Ransom Consulting, LLC
 Address: 2127 Hamilton Avenue
 Trenton, NJ 08619
 Phone: 215-901-4974
 Fax:
 Email: William.Schmidt@ransomenv.com
 These samples have been Previously analyzed by Alpha

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)
 Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:
 Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Report Information Data Deliverables Billing Information

FAX EMAIL Same as Client Info PO #: 3894
 ADEX Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
67219-11	PB-253-06-5501	12/7	1410	S	TS
-12	PB-253-07-5501		1420	S	TS
-13	PB-253-08-5501		1430	S	TS
-14	PB-253-09-5501		1440	S	TS
-15	PB-253-10-5501		1450	S	TS
-16	DUP-23		-	S	TS
-17	PB-211207		1500	W	TS
-18	TB-211207		-	W	TS

ANALYSIS

PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist (1-5)
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Lab to do
 Preservation
 Lab to do
 (Please specify below)

TOTAL BOTTLES

Container Type	G	G	G	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-

Relinquished By: [Signature] Date/Time: 12/7/21 16:25
 Received By: [Signature] Date/Time: 12/7/21 17:50
 [Signature] Date/Time: 12/7/21 20:30
 [Signature] Date/Time: 12/8/21 10:50
 [Signature] Date/Time: 12/8/21 08:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-01(142) (rev. 8-JAN-12)

PADEP Short List Analytical List:

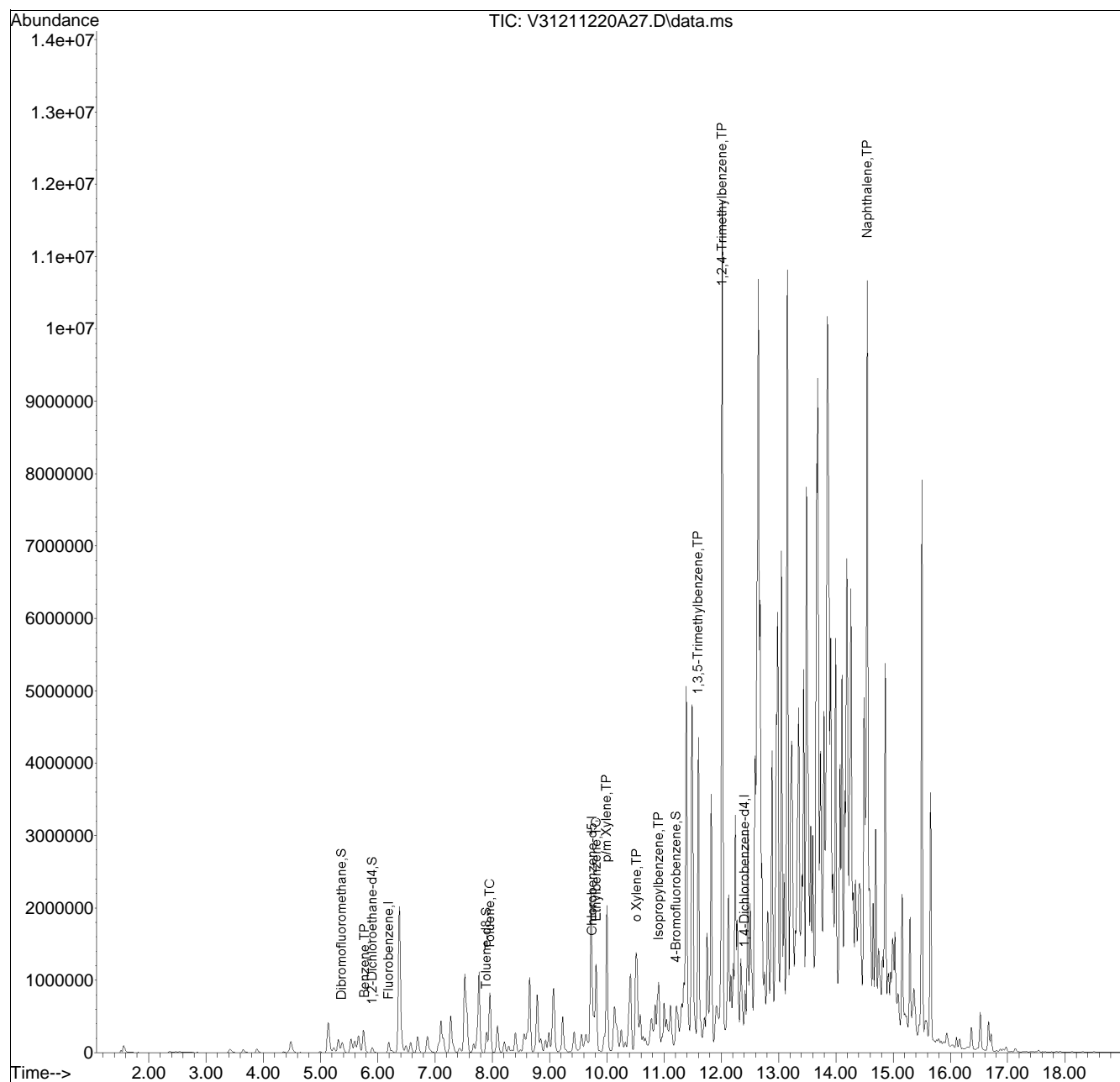
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
6. Waste Oil – benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, lead

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2021\211220A\
 Data File : V31211220A27.D
 Acq On : 20 Dec 2021 05:54 pm
 Operator : VOA131:MV
 Sample : 12167219-07,31H,4.64,5,0.100,,a
 Misc : WG1585981,ICAL18518
 ALS Vial : 27 Sample Multiplier: 1

Quant Time: Dec 21 05:07:47 2021
 Quant Method : I:\VOLATILES\VOA131\2021\211220A\V31_211202A_8260D.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Fri Dec 03 10:30:02 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20A\V31211220A01.D•

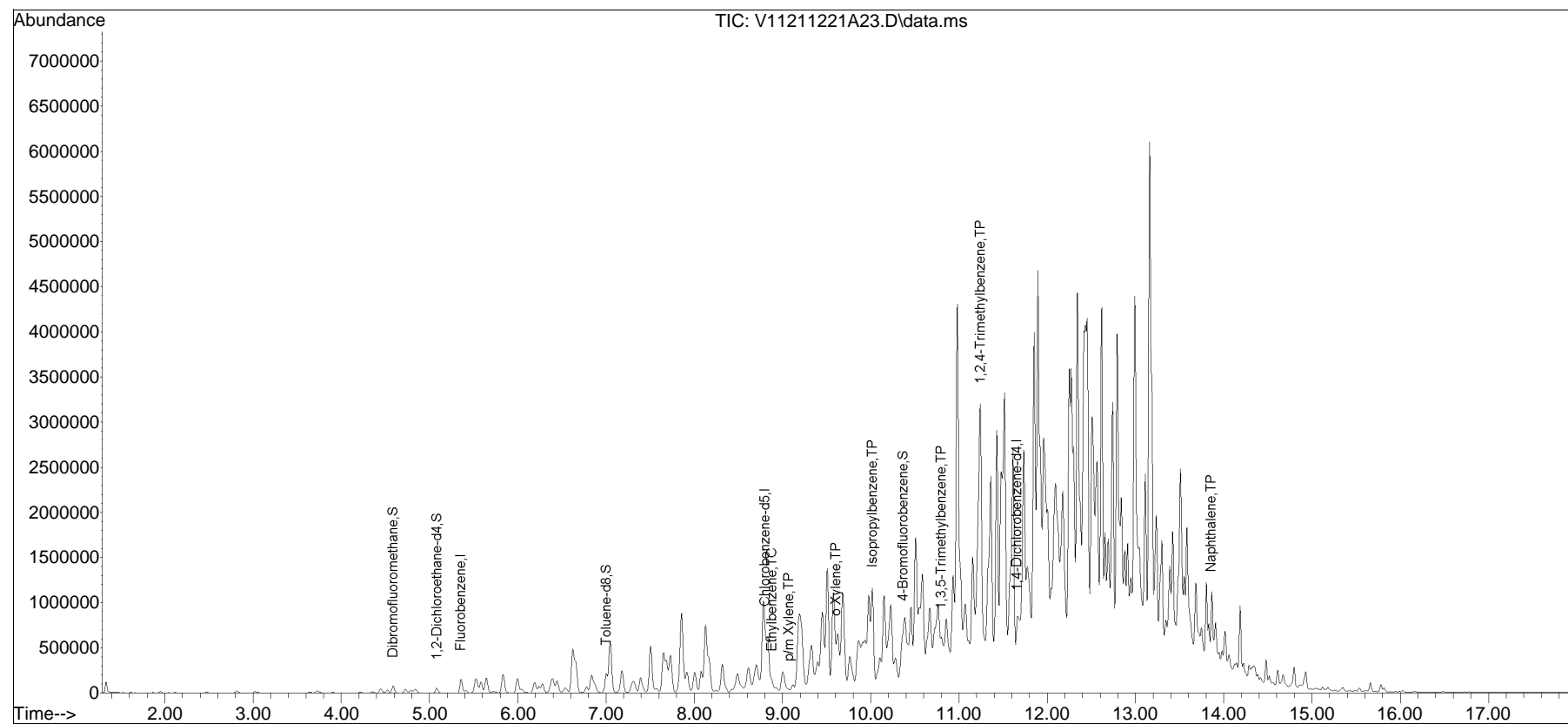


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\211221A\
Data File : V11211221A23.D
Acq On : 21 Dec 2021 03:10 pm
Operator : VOA111:KJD
Sample : L2167219-10,31,5.51,5,,B
Misc : WG1586225,ICAL18566
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Dec 21 15:37:17 2021
Quant Method : I:\VOLATILES\VOA111\2021\211221A\V111_211214A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Dec 14 12:27:59 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list21A\V11211221A01.D•

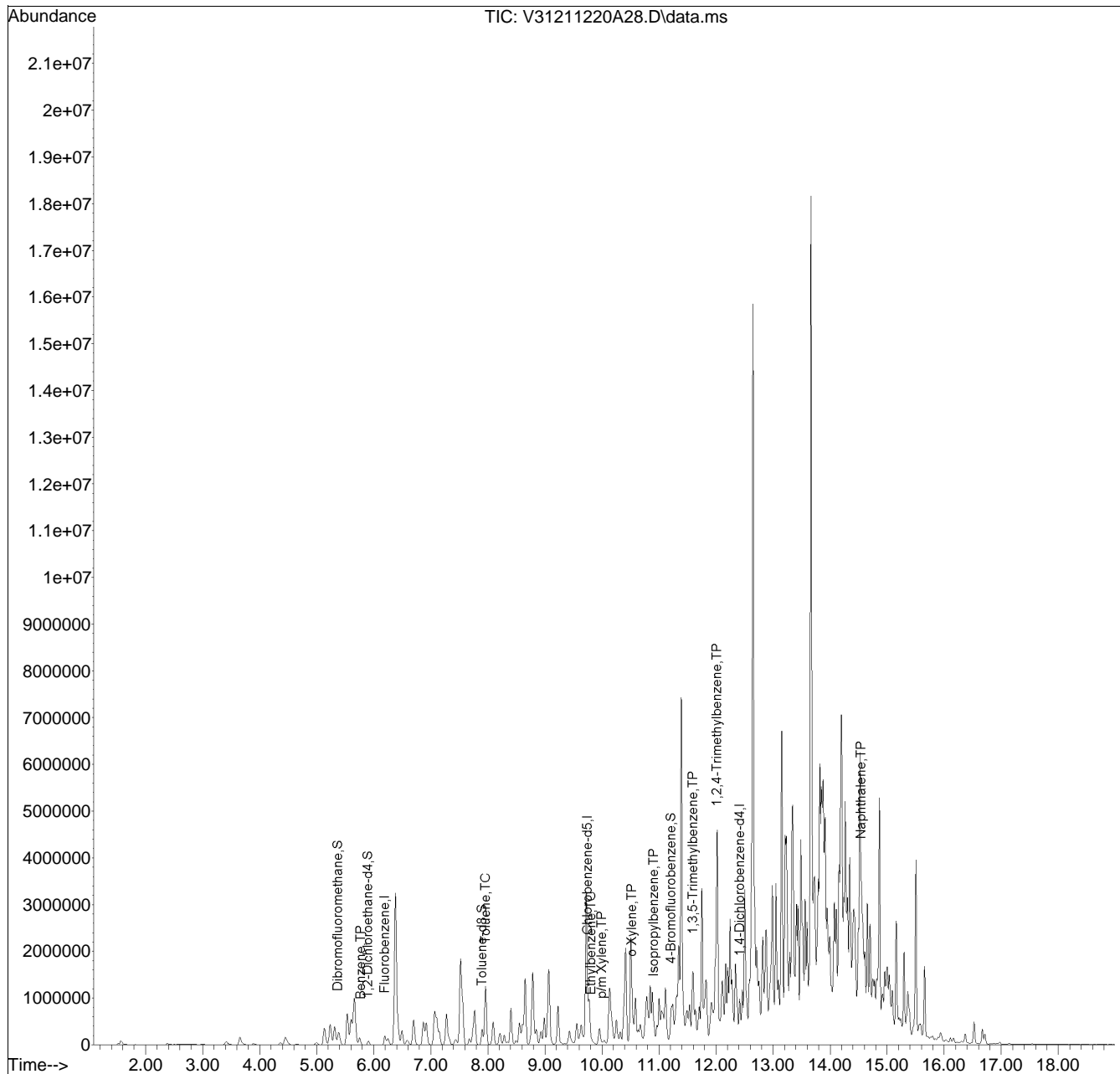


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2021\211220A\
 Data File : V31211220A28.D
 Acq On : 20 Dec 2021 06:17 pm
 Operator : VOA131:MV
 Sample : 12167219-13,31H,5.33,5,0.100,,a
 Misc : WG1585981,ICAL18518
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Dec 21 05:07:51 2021
 Quant Method : I:\VOLATILES\VOA131\2021\211220A\V31_211202A_8260D.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Fri Dec 03 10:30:02 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20A\V31211220A01.D•

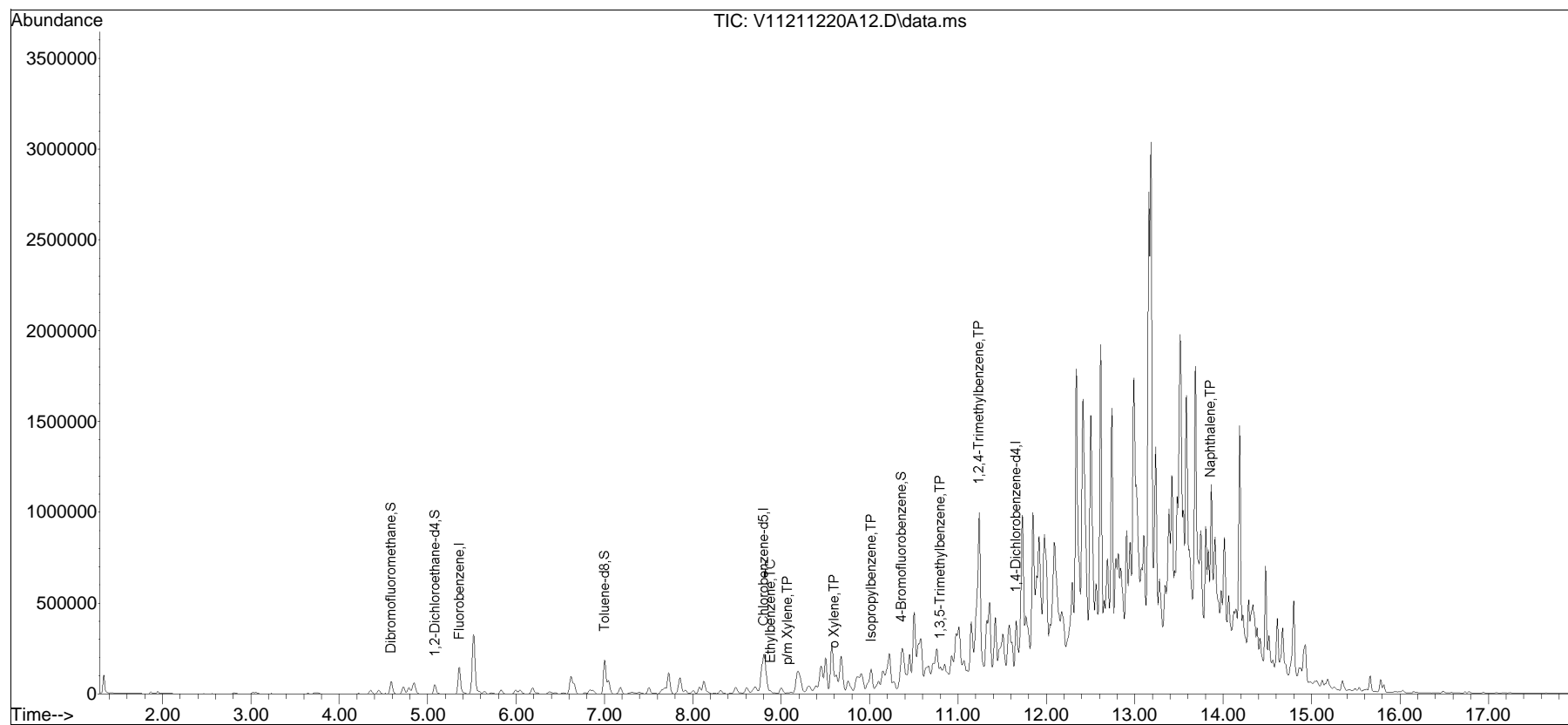


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\211220A\
Data File : V11211220A12.D
Acq On : 20 Dec 2021 12:43 pm
Operator : VOA111:MV
Sample : L2167219-14,31,4.21,5,,B
Misc : WG1586011,ICAL18566
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Dec 21 08:40:26 2021
Quant Method : I:\VOLATILES\VOA111\2021\211220A\V111_211214A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Dec 14 12:27:59 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20A\V11211220A01.D•

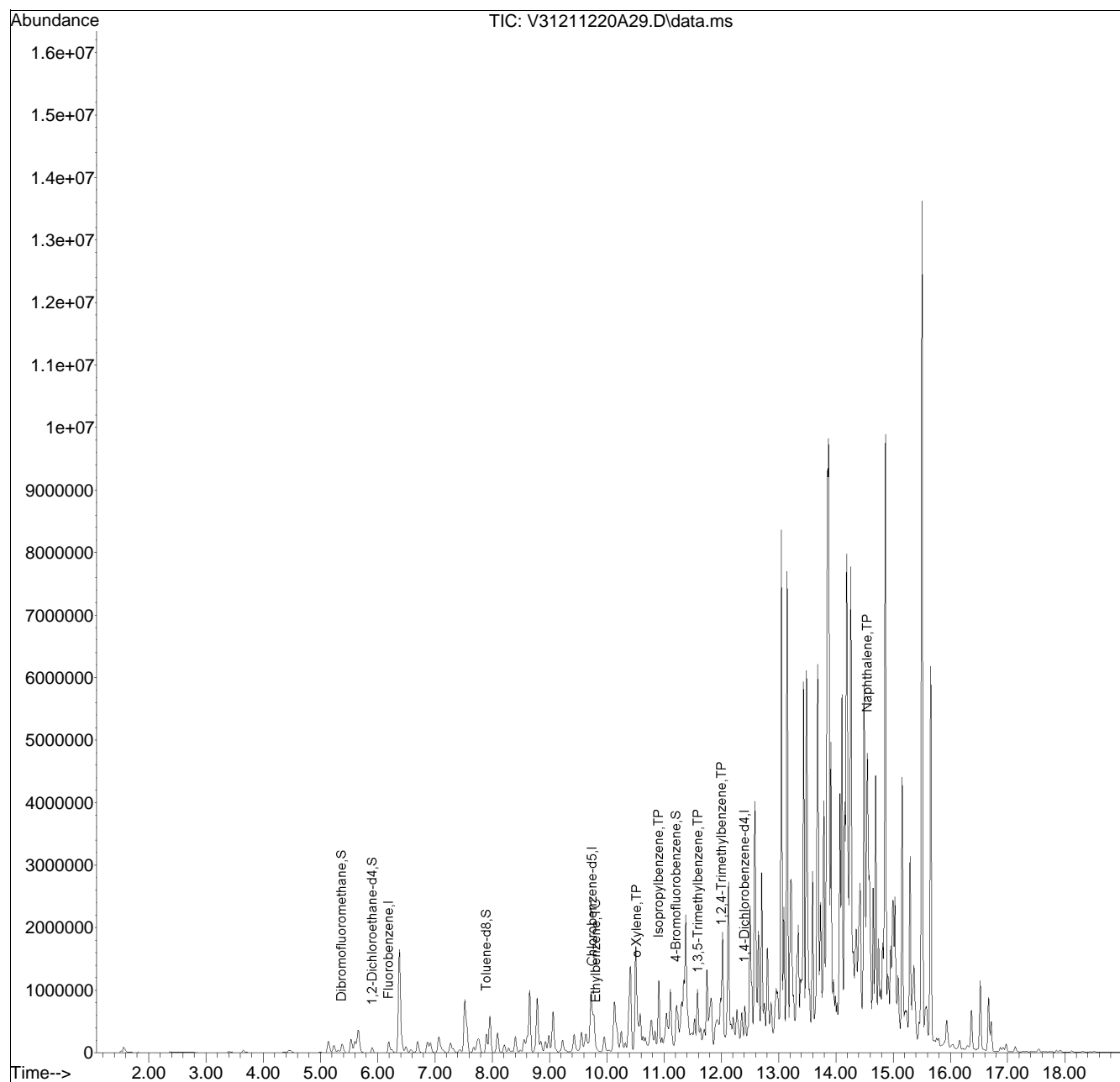


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2021\211220A\
Data File : V31211220A29.D
Acq On : 20 Dec 2021 06:40 pm
Operator : VOA131:MV
Sample : 12167219-15,31H,5.71,5,0.100,,a
Misc : WG1585981,ICAL18518
ALS Vial : 29 Sample Multiplier: 1

Quant Time: Dec 21 06:01:53 2021
Quant Method : I:\VOLATILES\VOA131\2021\211220A\V31_211202A_8260D.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Fri Dec 03 10:30:02 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20A\V31211220A01.D•

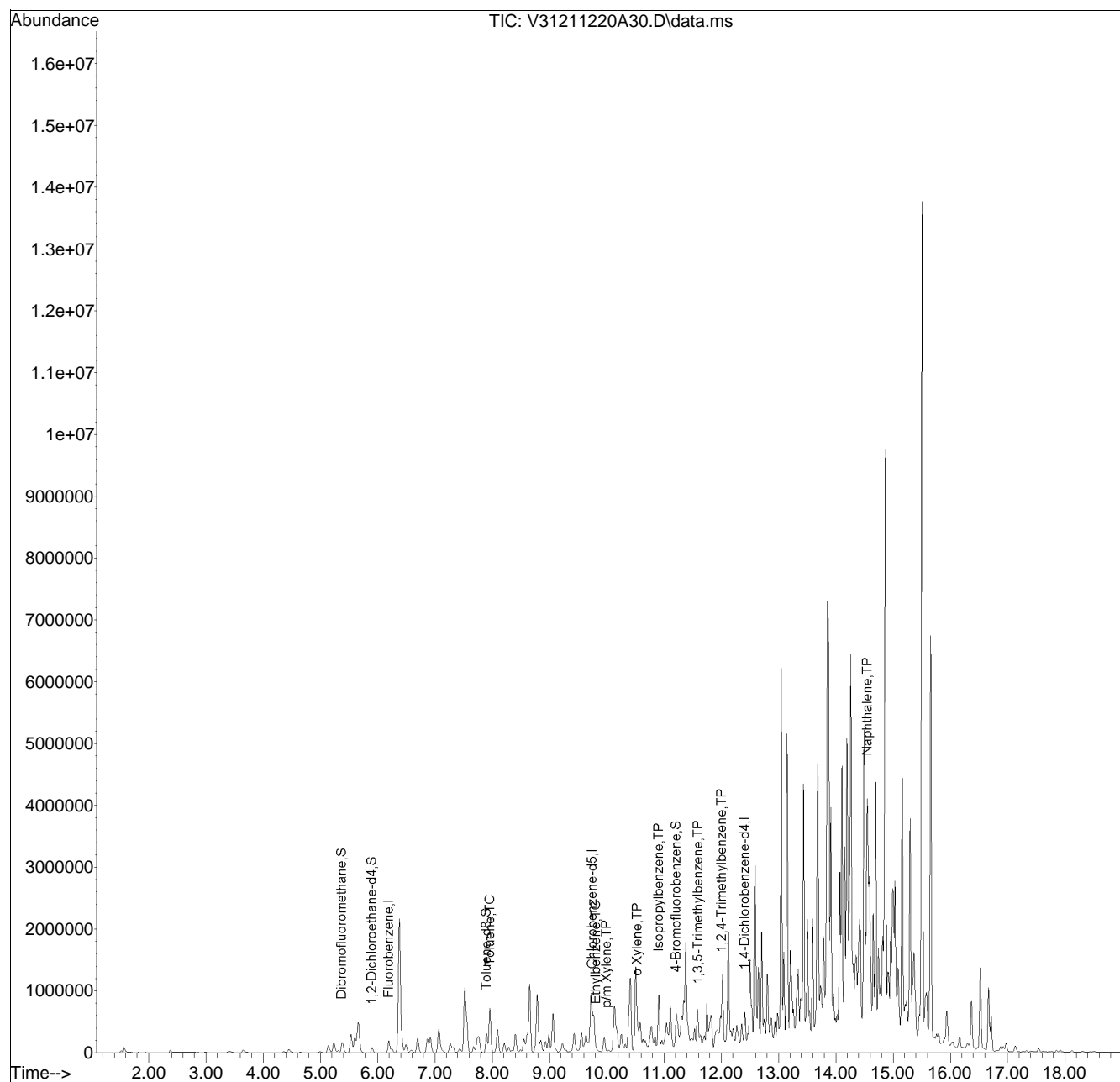


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2021\211220A\
 Data File : V31211220A30.D
 Acq On : 20 Dec 2021 07:02 pm
 Operator : VOA131:MV
 Sample : 12167219-16,31H,5.32,5,0.100,,a
 Misc : WG1585981,ICAL18518
 ALS Vial : 30 Sample Multiplier: 1

Quant Time: Dec 21 06:02:25 2021
 Quant Method : I:\VOLATILES\VOA131\2021\211220A\V31_211202A_8260D.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Fri Dec 03 10:30:02 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20A\V31211220A01.D•





ANALYTICAL REPORT

Lab Number:	L2167531
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	12/27/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2167531

Report Date: 12/27/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2167531-01	PB-253-11-SS01	SOIL	PHILADELPHIA, PA	12/08/21 09:10	12/08/21
L2167531-02	PB-253-12-SS01	SOIL	PHILADELPHIA, PA	12/08/21 09:20	12/08/21
L2167531-03	PB-253-13-SS01	SOIL	PHILADELPHIA, PA	12/08/21 09:35	12/08/21
L2167531-04	PB-253-14-SS01	SOIL	PHILADELPHIA, PA	12/08/21 09:50	12/08/21
L2167531-05	PB-253-15-SS01	SOIL	PHILADELPHIA, PA	12/08/21 10:00	12/08/21
L2167531-06	PB-253-16-SS01	SOIL	PHILADELPHIA, PA	12/08/21 10:15	12/08/21
L2167531-07	PB-253-17-SS01	SOIL	PHILADELPHIA, PA	12/08/21 10:30	12/08/21
L2167531-08	PB-883-08-SS01	SOIL	PHILADELPHIA, PA	12/08/21 11:35	12/08/21
L2167531-09	PB-883-09-SS01	SOIL	PHILADELPHIA, PA	12/08/21 11:55	12/08/21
L2167531-10	PB-883-10-SS01	SOIL	PHILADELPHIA, PA	12/08/21 12:15	12/08/21
L2167531-11	PB-883-11-SS01	SOIL	PHILADELPHIA, PA	12/08/21 12:45	12/08/21
L2167531-12	PB-883-12-SS01	SOIL	PHILADELPHIA, PA	12/08/21 13:00	12/08/21
L2167531-13	PB-883-13-SS01	SOIL	PHILADELPHIA, PA	12/08/21 13:10	12/08/21
L2167531-14	PB-883-14-SS01	SOIL	PHILADELPHIA, PA	12/08/21 13:20	12/08/21
L2167531-15	PB-883-16-SS01	SOIL	PHILADELPHIA, PA	12/08/21 13:25	12/08/21
L2167531-16	PB-883-17-SS01	SOIL	PHILADELPHIA, PA	12/08/21 13:40	12/08/21
L2167531-17	PB-883-18-SS01	SOIL	PHILADELPHIA, PA	12/08/21 13:50	12/08/21
L2167531-18	PB-883-19-SS01	SOIL	PHILADELPHIA, PA	12/08/21 14:00	12/08/21
L2167531-19	PB-883-22-SS01	SOIL	PHILADELPHIA, PA	12/08/21 14:05	12/08/21
L2167531-20	PB-883-23-SS01	SOIL	PHILADELPHIA, PA	12/08/21 14:15	12/08/21
L2167531-21	PB-883-24-SS01	SOIL	PHILADELPHIA, PA	12/08/21 14:30	12/08/21
L2167531-22	FB-211208-1	WATER	PHILADELPHIA, PA	12/08/21 14:40	12/08/21
L2167531-23	FB-211208-2	WATER	PHILADELPHIA, PA	12/08/21 14:45	12/08/21
L2167531-24	DUP-24	SOIL	PHILADELPHIA, PA	12/08/21 00:00	12/08/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2167531-25	TB-211208	WATER	PHILADELPHIA, PA	12/08/21 00:00	12/08/21



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2167531-17: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (185%) and 4-bromofluorobenzene (167%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2167531-15D, -16D and -17D: The sample has elevated detection limits due to the dilution required by the sample matrix.

Semivolatile Organics by SIM

L2167531-23: The Field Blank has a concentration above the reporting limit for Naphthalene and Phenanthrene. The sample was re-extracted with the method required holding time exceeded and was non-detect for this target compound. The results of both extractions are reported.

Total Metals

The WG1585605-3 MS recovery, performed on L2167531-08, is outside the acceptance criteria for lead (63%). A post digestion spike was performed and yielded an unacceptable recovery for lead (62%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 12/27/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-01
 Client ID: PB-253-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 09:10
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 02:19
 Analyst: MKS
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
Toluene	ND		mg/kg	0.00089	0.00048	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1
Naphthalene	ND		mg/kg	0.0036	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-02
 Client ID: PB-253-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 09:20
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 00:49
 Analyst: MKS
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
Toluene	ND		mg/kg	0.0011	0.00058	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1
Naphthalene	ND		mg/kg	0.0043	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-03
 Client ID: PB-253-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 09:35
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 01:11
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
Toluene	ND		mg/kg	0.0014	0.00078	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00048	1
Naphthalene	ND		mg/kg	0.0058	0.00094	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-04
 Client ID: PB-253-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 09:50
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 01:34
 Analyst: MKS
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
Toluene	ND		mg/kg	0.0011	0.00058	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1
Naphthalene	ND		mg/kg	0.0042	0.00069	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-05
 Client ID: PB-253-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 10:00
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 01:57
 Analyst: MKS
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
Toluene	ND		mg/kg	0.0010	0.00057	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1
Naphthalene	ND		mg/kg	0.0042	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-06
 Client ID: PB-253-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 10:15
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 06:53
 Analyst: AJK
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
Toluene	ND		mg/kg	0.0010	0.00056	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1
Naphthalene	ND		mg/kg	0.0042	0.00068	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-07
 Client ID: PB-253-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 10:30
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 07:14
 Analyst: AJK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00028	1
Benzene	ND		mg/kg	0.00068	0.00023	1
Toluene	ND		mg/kg	0.0014	0.00074	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00046	1
Naphthalene	ND		mg/kg	0.0055	0.00089	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	110		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-08
 Client ID: PB-883-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 11:35
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 07:34
 Analyst: AJK
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-09
 Client ID: PB-883-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 11:55
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 07:55
 Analyst: AJK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-10
 Client ID: PB-883-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 12:15
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 08:16
 Analyst: AJK
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-11
 Client ID: PB-883-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 12:45
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 08:36
 Analyst: AJK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-12
 Client ID: PB-883-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:00
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 08:57
 Analyst: AJK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	113		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-13
 Client ID: PB-883-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:10
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 09:18
 Analyst: AJK
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-14
 Client ID: PB-883-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:20
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 13:26
 Analyst: AJK
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00062	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00067	1
1,2-Dibromoethane	ND		mg/kg	0.00062	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0025	0.00069	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	115		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-15
 Client ID: PB-883-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:25
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 09:38
 Analyst: AJK
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00023	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.00019	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-16
 Client ID: PB-883-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:40
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 22:10
 Analyst: JC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00072	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	152	Q	70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-17
 Client ID: PB-883-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:50
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/22/21 08:04
 Analyst: MV
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	ND		mg/kg	0.064	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	ND		mg/kg	0.064	0.0090	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	0.044	J	mg/kg	0.064	0.019	1
Xylenes, Total	0.044	J	mg/kg	0.064	0.019	1
Isopropylbenzene	0.82		mg/kg	0.064	0.0070	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	0.040	J	mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	185	Q	70-130
4-Bromofluorobenzene	167	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-18
 Client ID: PB-883-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:00
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 11:42
 Analyst: MV
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	115		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-19
 Client ID: PB-883-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:05
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 10:20
 Analyst: AJK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00024	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	113		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-20
 Client ID: PB-883-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:15
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 10:40
 Analyst: AJK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0030	0.00030	1
Benzene	ND		mg/kg	0.00074	0.00025	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00038	1
Toluene	ND		mg/kg	0.0015	0.00081	1
1,2-Dibromoethane	ND		mg/kg	0.00074	0.00044	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0030	0.00083	1
o-Xylene	ND		mg/kg	0.0015	0.00043	1
Xylenes, Total	ND		mg/kg	0.0015	0.00043	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0030	0.00029	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0030	0.00050	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	110		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-21
 Client ID: PB-883-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:30
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 11:01
 Analyst: AJK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-22
 Client ID: FB-211208-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:40
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/20/21 16:24
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-22
 Client ID: FB-211208-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:40
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 09:21
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-23
 Client ID: FB-211208-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:45
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/20/21 16:32
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-23
 Client ID: FB-211208-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:45
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 09:41
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-24
 Client ID: DUP-24
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 00:00
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 11:22
 Analyst: AJK
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
Toluene	ND		mg/kg	0.0011	0.00062	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1
Naphthalene	ND		mg/kg	0.0046	0.00075	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	113		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-25
 Client ID: TB-211208
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 00:00
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/20/21 16:41
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-25
 Client ID: TB-211208
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 00:00
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/22/21 12:22
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/18/21 17:40
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-05 Batch: WG1585264-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
Toluene	ND		mg/kg	0.0010	0.00054
Ethylbenzene	ND		mg/kg	0.0010	0.00014
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033
Naphthalene	ND		mg/kg	0.0040	0.00065

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/20/21 10:40
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 18 Batch: WG1585532-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 12/20/21 14:42
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 22-23,25 Batch: WG1585549-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/19/21 06:32
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 06-15,19-21,24 Batch: WG1585594-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033
Naphthalene	ND		mg/kg	0.0040	0.00065

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/19/21 08:42
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 22-23 Batch: WG1585679-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/20/21 19:34
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 16 Batch: WG1586528-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/22/21 07:39
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 17 Batch: WG1586695-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	104		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/22/21 08:23
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 25 Batch: WG1586738-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	100		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-05 Batch: WG1585264-3 WG1585264-4								
Methyl tert butyl ether	97		93		66-130	4		30
Benzene	88		90		70-130	2		30
Toluene	84		86		70-130	2		30
Ethylbenzene	87		89		70-130	2		30
Isopropylbenzene	83		84		70-130	1		30
1,3,5-Trimethylbenzene	83		84		70-130	1		30
1,2,4-Trimethylbenzene	83		84		70-130	1		30
Naphthalene	82		78		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	114		112		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	109		110		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 18 Batch: WG1585532-3 WG1585532-4								
Methyl tert butyl ether	86		94		66-130	9		30
Benzene	98		97		70-130	1		30
1,2-Dichloroethane	88		91		70-130	3		30
Toluene	100		100		70-130	0		30
1,2-Dibromoethane	93		102		70-130	9		30
Ethylbenzene	101		100		70-130	1		30
p/m-Xylene	105		104		70-130	1		30
o-Xylene	105		104		70-130	1		30
Isopropylbenzene	106		101		70-130	5		30
1,3,5-Trimethylbenzene	109		103		70-130	6		30
1,2,4-Trimethylbenzene	107		103		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	91		93		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	100		99		70-130
Dibromofluoromethane	96		97		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 22-23,25 Batch: WG1585549-2									
1,2-Dibromoethane	98		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 06-15,19-21,24 Batch: WG1585594-3 WG1585594-4								
Methyl tert butyl ether	92		106		66-130	14		30
Benzene	100		101		70-130	1		30
1,2-Dichloroethane	92		99		70-130	7		30
Toluene	103		105		70-130	2		30
1,2-Dibromoethane	96		109		70-130	13		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	110		110		70-130	0		30
o-Xylene	111		113		70-130	2		30
Isopropylbenzene	115		108		70-130	6		30
1,3,5-Trimethylbenzene	118		109		70-130	8		30
1,2,4-Trimethylbenzene	116		109		70-130	6		30
Naphthalene	98		105		70-130	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	88		94		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	101		99		70-130
Dibromofluoromethane	97		97		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 22-23 Batch: WG1585679-3 WG1585679-4								
Methyl tert butyl ether	83		89		63-130	7		20
Benzene	96		100		70-130	4		20
1,2-Dichloroethane	88		88		70-130	0		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		110		70-130	10		20
p/m-Xylene	105		110		70-130	5		20
o-Xylene	100		105		70-130	5		20
Isopropylbenzene	99		110		70-130	11		20
1,3,5-Trimethylbenzene	98		100		64-130	2		20
1,2,4-Trimethylbenzene	96		100		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	93		95		70-130
Toluene-d8	103		102		70-130
4-Bromofluorobenzene	97		100		70-130
Dibromofluoromethane	95		94		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 16 Batch: WG1586528-3 WG1586528-4								
Methyl tert butyl ether	93		92		66-130	1		30
Benzene	100		99		70-130	1		30
1,2-Dichloroethane	79		79		70-130	0		30
Toluene	102		101		70-130	1		30
1,2-Dibromoethane	87		88		70-130	1		30
Ethylbenzene	104		103		70-130	1		30
p/m-Xylene	107		107		70-130	0		30
o-Xylene	105		102		70-130	3		30
Isopropylbenzene	104		99		70-130	5		30
1,3,5-Trimethylbenzene	101		102		70-130	1		30
1,2,4-Trimethylbenzene	100		101		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	87		87		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	94		95		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 17 Batch: WG1586695-3 WG1586695-4								
Methyl tert butyl ether	94		96		66-130	2		30
Benzene	89		93		70-130	4		30
1,2-Dichloroethane	90		95		70-130	5		30
Toluene	91		95		70-130	4		30
1,2-Dibromoethane	99		104		70-130	5		30
Ethylbenzene	92		96		70-130	4		30
p/m-Xylene	94		99		70-130	5		30
o-Xylene	93		98		70-130	5		30
Isopropylbenzene	94		96		70-130	2		30
1,3,5-Trimethylbenzene	93		97		70-130	4		30
1,2,4-Trimethylbenzene	93		96		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	98		96		70-130
Dibromofluoromethane	98		97		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 25 Batch: WG1586738-3 WG1586738-4								
Methyl tert butyl ether	82		86		63-130	5		20
Benzene	100		100		70-130	0		20
1,2-Dichloroethane	93		96		70-130	3		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	95		100		70-130	5		20
Isopropylbenzene	110		100		70-130	10		20
1,3,5-Trimethylbenzene	110		100		64-130	10		20
1,2,4-Trimethylbenzene	110		100		70-130	10		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		100		70-130
Toluene-d8	98		95		70-130
4-Bromofluorobenzene	104		100		70-130
Dibromofluoromethane	97		96		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-08
 Client ID: PB-883-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 11:35
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 00:35
 Analyst: EK
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-09
 Client ID: PB-883-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 11:55
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 00:58
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	96		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-10
 Client ID: PB-883-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 12:15
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 01:21
 Analyst: EK
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	91		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-11
 Client ID: PB-883-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 12:45
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 01:44
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	90		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-12
 Client ID: PB-883-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:00
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 05:35
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.028	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.021	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-13
 Client ID: PB-883-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:10
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 05:58
 Analyst: EK
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-14
 Client ID: PB-883-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:20
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 06:21
 Analyst: EK
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	83		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-15 D
 Client ID: PB-883-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:25
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/22/21 12:00
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.99	0.12	5
Fluorene	ND		mg/kg	0.99	0.096	5
Phenanthrene	ND		mg/kg	0.59	0.12	5
Anthracene	ND		mg/kg	0.59	0.19	5
Pyrene	0.36	J	mg/kg	0.59	0.098	5
Benzo(a)anthracene	ND		mg/kg	0.59	0.11	5
Chrysene	0.43	J	mg/kg	0.59	0.10	5
Benzo(b)fluoranthene	ND		mg/kg	0.59	0.17	5
Benzo(a)pyrene	ND		mg/kg	0.79	0.24	5
Benzo(ghi)perylene	ND		mg/kg	0.79	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	53		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-16 D
 Client ID: PB-883-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:40
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 15:11
 Analyst: CMM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.90	0.11	5
Fluorene	0.29	J	mg/kg	0.90	0.087	5
Phenanthrene	0.43	J	mg/kg	0.54	0.11	5
Anthracene	ND		mg/kg	0.54	0.18	5
Pyrene	0.20	J	mg/kg	0.54	0.089	5
Benzo(a)anthracene	0.13	J	mg/kg	0.54	0.10	5
Chrysene	0.36	J	mg/kg	0.54	0.094	5
Benzo(b)fluoranthene	ND		mg/kg	0.54	0.15	5
Benzo(a)pyrene	ND		mg/kg	0.72	0.22	5
Benzo(ghi)perylene	ND		mg/kg	0.72	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-17 D
 Client ID: PB-883-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:50
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 15:35
 Analyst: CMM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.91	0.11	5
Fluorene	0.25	J	mg/kg	0.91	0.088	5
Phenanthrene	0.52	J	mg/kg	0.54	0.11	5
Anthracene	ND		mg/kg	0.54	0.18	5
Pyrene	0.19	J	mg/kg	0.54	0.090	5
Benzo(a)anthracene	ND		mg/kg	0.54	0.10	5
Chrysene	0.37	J	mg/kg	0.54	0.094	5
Benzo(b)fluoranthene	ND		mg/kg	0.54	0.15	5
Benzo(a)pyrene	ND		mg/kg	0.72	0.22	5
Benzo(ghi)perylene	ND		mg/kg	0.72	0.11	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	66		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-18
 Client ID: PB-883-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:00
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 13:36
 Analyst: SLR
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	0.027	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-19
 Client ID: PB-883-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:05
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 07:08
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-20
 Client ID: PB-883-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:15
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 07:31
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	72		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-21
 Client ID: PB-883-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:30
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 07:55
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-22
 Client ID: FB-211208-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:40
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/18/21 17:35
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 12/14/21 00:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.09	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	74		15-120
4-Terphenyl-d14	86		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-23
 Client ID: FB-211208-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:45
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/18/21 18:37
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 12/14/21 00:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	1.1		ug/l	0.10	0.05	1
Fluorene	0.02	J	ug/l	0.10	0.01	1
Phenanthrene	0.13		ug/l	0.05	0.02	1
Anthracene	0.03	J	ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	75		15-120
4-Terphenyl-d14	85		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-23 RE
 Client ID: FB-211208-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:45
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/26/21 14:09
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 12/23/21 18:58

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	88		15-120
4-Terphenyl-d14	101		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 12/18/21 17:14
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 12/14/21 00:07

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 22-23 Batch: WG1582804-1					
Naphthalene	0.06	J	ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	0.01	J	ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	79		15-120
4-Terphenyl-d14	90		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 12/19/21 22:15
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 12/18/21 20:28

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 08-21 Batch: WG1585095-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.097	0.020
Anthracene	ND		mg/kg	0.097	0.032
Pyrene	ND		mg/kg	0.097	0.016
Benzo(a)anthracene	ND		mg/kg	0.097	0.018
Chrysene	ND		mg/kg	0.097	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.097	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.039
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	100		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 12/26/21 13:50
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 12/23/21 15:09

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 23 Batch: WG1587278-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	64		15-120
4-Terphenyl-d14	74		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 22-23 Batch: WG1582804-2 WG1582804-3								
Naphthalene	81		77		40-140	5		40
Fluorene	86		84		40-140	2		40
Phenanthrene	79		78		40-140	1		40
Anthracene	89		87		40-140	2		40
Pyrene	90		89		26-127	1		40
Benzo(a)anthracene	81		80		40-140	1		40
Chrysene	91		92		40-140	1		40
Benzo(b)fluoranthene	81		83		40-140	2		40
Benzo(a)pyrene	91		89		40-140	2		40
Benzo(ghi)perylene	82		80		40-140	2		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	81		82		23-120
2-Fluorobiphenyl	90		84		15-120
4-Terphenyl-d14	95		94		41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 08-21 Batch: WG1585095-2 WG1585095-3								
Naphthalene	75		88		40-140	16		50
Fluorene	83		99		40-140	18		50
Phenanthrene	81		95		40-140	16		50
Anthracene	82		96		40-140	16		50
Pyrene	82		97		35-142	17		50
Benzo(a)anthracene	86		103		40-140	18		50
Chrysene	82		98		40-140	18		50
Benzo(b)fluoranthene	84		106		40-140	23		50
Benzo(a)pyrene	81		98		40-140	19		50
Benzo(ghi)perylene	91		109		40-140	18		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	73		84		23-120
2-Fluorobiphenyl	83		98		30-120
4-Terphenyl-d14	89		104		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 23 Batch: WG1587278-2 WG1587278-3								
Naphthalene	56		65		40-140	15		40
Fluorene	62		71		40-140	14		40
Phenanthrene	60		73		40-140	20		40
Anthracene	64		73		40-140	13		40
Pyrene	65		88		26-127	30		40
Benzo(a)anthracene	62		81		40-140	27		40
Chrysene	61		82		40-140	29		40
Benzo(b)fluoranthene	69		96		40-140	33		40
Benzo(a)pyrene	67		91		40-140	30		40
Benzo(ghi)perylene	57		76		40-140	29		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	55		63		23-120
2-Fluorobiphenyl	63		70		15-120
4-Terphenyl-d14	68		78		41-149



METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-08
 Client ID: PB-883-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 11:35
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	12.8		mg/kg	2.48	0.133	1	12/20/21 23:32	12/22/21 00:53	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-09
 Client ID: PB-883-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 11:55
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.18		mg/kg	2.03	0.109	1	12/20/21 23:32	12/22/21 00:34	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-10

Date Collected: 12/08/21 12:15

Client ID: PB-883-10-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.67		mg/kg	2.14	0.114	1	12/20/21 23:32	12/22/21 00:39	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-11

Date Collected: 12/08/21 12:45

Client ID: PB-883-11-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.25		mg/kg	2.32	0.124	1	12/20/21 23:32	12/22/21 00:44	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-12

Date Collected: 12/08/21 13:00

Client ID: PB-883-12-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.0		mg/kg	2.27	0.122	1	12/20/21 23:32	12/22/21 00:48	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-13

Date Collected: 12/08/21 13:10

Client ID: PB-883-13-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.72		mg/kg	2.44	0.130	1	12/20/21 23:32	12/22/21 01:25	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-14

Date Collected: 12/08/21 13:20

Client ID: PB-883-14-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.14		mg/kg	2.35	0.126	1	12/20/21 23:32	12/22/21 01:30	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-15

Date Collected: 12/08/21 13:25

Client ID: PB-883-16-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.62		mg/kg	2.28	0.122	1	12/20/21 23:32	12/22/21 01:35	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-16

Date Collected: 12/08/21 13:40

Client ID: PB-883-17-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.06		mg/kg	4.20	0.225	2	12/20/21 23:32	12/22/21 11:19	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-17

Date Collected: 12/08/21 13:50

Client ID: PB-883-18-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.49		mg/kg	4.24	0.227	2	12/20/21 23:32	12/22/21 11:24	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-18

Date Collected: 12/08/21 14:00

Client ID: PB-883-19-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.75		mg/kg	4.24	0.228	2	12/20/21 23:32	12/22/21 11:29	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-19

Date Collected: 12/08/21 14:05

Client ID: PB-883-22-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.03		mg/kg	2.25	0.121	1	12/20/21 23:32	12/22/21 01:54	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-20
 Client ID: PB-883-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:15
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.64		mg/kg	2.26	0.121	1	12/20/21 23:32	12/22/21 01:58	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-21

Date Collected: 12/08/21 14:30

Client ID: PB-883-24-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.46		mg/kg	2.27	0.122	1	12/20/21 23:32	12/22/21 02:03	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-22

Date Collected: 12/08/21 14:40

Client ID: FB-211208-1

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/14/21 05:12	12/17/21 02:53	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-23

Date Collected: 12/08/21 14:45

Client ID: FB-211208-2

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/14/21 05:12	12/17/21 02:57	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 22-23 Batch: WG1582832-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	12/14/21 05:12	12/16/21 23:54	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 08-21 Batch: WG1585605-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	12/20/21 23:32	12/22/21 00:16	1,6010D	BV

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 22-23 Batch: WG1582832-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 08-21 Batch: WG1585605-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 22-23 QC Batch ID: WG1582832-3 WG1582832-4 QC Sample: L2167147-05 Client ID: MS Sample												
Lead, Total	1.973	530	492.8	93		482.8	91		75-125	2		20
Total Metals - Mansfield Lab Associated sample(s): 08-21 QC Batch ID: WG1585605-3 QC Sample: L2167531-08 Client ID: PB-883-08-SS01												
Lead, Total	12.8	51	44.9	63	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2167531

Report Date: 12/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 08-21 QC Batch ID: WG1585605-4 QC Sample: L2167531-08 Client ID: PB-883-08-SS01						
Lead, Total	12.8	10.9	mg/kg	16		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-01

Date Collected: 12/08/21 09:10

Client ID: PB-253-11-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.9		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-02

Date Collected: 12/08/21 09:20

Client ID: PB-253-12-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.5		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-03
Client ID: PB-253-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 09:35
Date Received: 12/08/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.0		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-04

Date Collected: 12/08/21 09:50

Client ID: PB-253-14-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-05

Date Collected: 12/08/21 10:00

Client ID: PB-253-15-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-06

Date Collected: 12/08/21 10:15

Client ID: PB-253-16-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.8		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-07

Date Collected: 12/08/21 10:30

Client ID: PB-253-17-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.8		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-08

Date Collected: 12/08/21 11:35

Client ID: PB-883-08-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.8		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-09

Date Collected: 12/08/21 11:55

Client ID: PB-883-09-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.6		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-10

Date Collected: 12/08/21 12:15

Client ID: PB-883-10-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.9		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-11
Client ID: PB-883-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 12:45
Date Received: 12/08/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-12

Date Collected: 12/08/21 13:00

Client ID: PB-883-12-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-13

Date Collected: 12/08/21 13:10

Client ID: PB-883-13-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.6		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-14
Client ID: PB-883-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:20
Date Received: 12/08/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-15
Client ID: PB-883-16-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:25
Date Received: 12/08/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.4		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-16
Client ID: PB-883-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 13:40
Date Received: 12/08/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.2		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-17

Date Collected: 12/08/21 13:50

Client ID: PB-883-18-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.9		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-18

Date Collected: 12/08/21 14:00

Client ID: PB-883-19-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.1		%	0.100	NA	1	-	12/10/21 10:12	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-19

Date Collected: 12/08/21 14:05

Client ID: PB-883-22-SS01

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	12/10/21 10:21	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-20
Client ID: PB-883-23-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:15
Date Received: 12/08/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	12/10/21 10:21	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167531
Report Date: 12/27/21

SAMPLE RESULTS

Lab ID: L2167531-21
 Client ID: PB-883-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/08/21 14:30
 Date Received: 12/08/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	12/10/21 10:21	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167531**Project Number:** 200.00135.005.03**Report Date:** 12/27/21**SAMPLE RESULTS**

Lab ID: L2167531-24

Date Collected: 12/08/21 00:00

Client ID: DUP-24

Date Received: 12/08/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	12/10/21 10:21	121,2540G	RI



Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2167531

Report Date: 12/27/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1581531-1 QC Sample: L2167531-01 Client ID: PB-253-11-SS01						
Solids, Total	86.9	85.4	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 19-21,24 QC Batch ID: WG1581534-1 QC Sample: L2167542-04 Client ID: DUP Sample						
Solids, Total	89.6	90.1	%	1		20



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167531**Project Number:** 200.00135.005.03**Report Date:** 12/27/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167531-01A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2167531-01B	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-01C	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-01D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2167531-02A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2167531-02B	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-02C	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-02D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2167531-03A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2167531-03B	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-03C	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-03D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2167531-04A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2167531-04B	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-04C	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-04D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2167531-05A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2167531-05B	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-05C	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-05D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167531**Project Number:** 200.00135.005.03**Report Date:** 12/27/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167531-06A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2167531-06B	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-06C	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-06D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2167531-07A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2167531-07B	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-07C	Vial water preserved	A	NA		2.2	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-07D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2167531-08A	Vial MeOH preserved	C	NA		2.6	Y	Absent		PA-8260HLW(14)
L2167531-08B	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-08C	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-08D	Plastic 2oz unpreserved for TS	C	NA		2.6	Y	Absent		TS(7)
L2167531-08E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.6	Y	Absent		PB-TI(180)
L2167531-08F	Glass 120ml/4oz unpreserved	C	NA		2.6	Y	Absent		PA-PAH(14)
L2167531-09A	Vial MeOH preserved	C	NA		2.6	Y	Absent		PA-8260HLW(14)
L2167531-09B	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-09C	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-09D	Plastic 2oz unpreserved for TS	C	NA		2.6	Y	Absent		TS(7)
L2167531-09E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.6	Y	Absent		PB-TI(180)
L2167531-09F	Glass 120ml/4oz unpreserved	C	NA		2.6	Y	Absent		PA-PAH(14)
L2167531-10A	Vial MeOH preserved	C	NA		2.6	Y	Absent		PA-8260HLW(14)
L2167531-10B	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-10C	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-10D	Plastic 2oz unpreserved for TS	C	NA		2.6	Y	Absent		TS(7)
L2167531-10E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.6	Y	Absent		PB-TI(180)
L2167531-10F	Glass 120ml/4oz unpreserved	C	NA		2.6	Y	Absent		PA-PAH(14)
L2167531-11A	Vial MeOH preserved	C	NA		2.6	Y	Absent		PA-8260HLW(14)
L2167531-11B	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167531**Project Number:** 200.00135.005.03**Report Date:** 12/27/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167531-11C	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-11D	Plastic 2oz unpreserved for TS	C	NA		2.6	Y	Absent		TS(7)
L2167531-11E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.6	Y	Absent		PB-TI(180)
L2167531-11F	Glass 120ml/4oz unpreserved	C	NA		2.6	Y	Absent		PA-PAH(14)
L2167531-12A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167531-12B	Vial water preserved	B	NA		2.1	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-12C	Vial water preserved	B	NA		2.1	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-12D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167531-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2167531-12F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2167531-13A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167531-13B	Vial water preserved	B	NA		2.1	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-13C	Vial water preserved	B	NA		2.1	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-13D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167531-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2167531-13F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2167531-14A	Vial MeOH preserved	C	NA		2.6	Y	Absent		PA-8260HLW(14)
L2167531-14B	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-14C	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-14D	Plastic 2oz unpreserved for TS	C	NA		2.6	Y	Absent		TS(7)
L2167531-14E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.6	Y	Absent		PB-TI(180)
L2167531-14F	Glass 120ml/4oz unpreserved	C	NA		2.6	Y	Absent		PA-PAH(14)
L2167531-15A	Vial MeOH preserved	C	NA		2.6	Y	Absent		PA-8260HLW(14)
L2167531-15B	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-15C	Vial water preserved	C	NA		2.6	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-15D	Plastic 2oz unpreserved for TS	C	NA		2.6	Y	Absent		TS(7)
L2167531-15E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.6	Y	Absent		PB-TI(180)
L2167531-15F	Glass 120ml/4oz unpreserved	C	NA		2.6	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167531**Project Number:** 200.00135.005.03**Report Date:** 12/27/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167531-16A	Vial MeOH preserved	D	NA		2.5	Y	Absent		PA-8260HLW(14)
L2167531-16B	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-16C	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-16D	Plastic 2oz unpreserved for TS	D	NA		2.5	Y	Absent		TS(7)
L2167531-16E	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.5	Y	Absent		PB-TI(180)
L2167531-16F	Glass 120ml/4oz unpreserved	D	NA		2.5	Y	Absent		PA-PAH(14)
L2167531-17A	Vial MeOH preserved	D	NA		2.5	Y	Absent		PA-8260HLW(14)
L2167531-17B	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-17C	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-17D	Plastic 2oz unpreserved for TS	D	NA		2.5	Y	Absent		TS(7)
L2167531-17E	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.5	Y	Absent		PB-TI(180)
L2167531-17F	Glass 120ml/4oz unpreserved	D	NA		2.5	Y	Absent		PA-PAH(14)
L2167531-18A	Vial MeOH preserved	B	NA		2.1	Y	Absent		PA-8260HLW(14)
L2167531-18B	Vial water preserved	B	NA		2.1	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-18C	Vial water preserved	B	NA		2.1	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-18D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167531-18E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2167531-18F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2167531-19A	Vial MeOH preserved	D	NA		2.5	Y	Absent		PA-8260HLW(14)
L2167531-19B	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-19C	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-19D	Plastic 2oz unpreserved for TS	D	NA		2.5	Y	Absent		TS(7)
L2167531-19E	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.5	Y	Absent		PB-TI(180)
L2167531-19F	Glass 120ml/4oz unpreserved	D	NA		2.5	Y	Absent		PA-PAH(14)
L2167531-20A	Vial MeOH preserved	D	NA		2.5	Y	Absent		PA-8260HLW(14)
L2167531-20B	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-20C	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-20D	Plastic 2oz unpreserved for TS	D	NA		2.5	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167531**Project Number:** 200.00135.005.03**Report Date:** 12/27/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167531-20E	Metals Only-Glass 60mL/2oz unpreserved	D	NA		2.5	Y	Absent		PB-TI(180)
L2167531-20F	Glass 120ml/4oz unpreserved	D	NA		2.5	Y	Absent		PA-PAH(14)
L2167531-21A	Vial MeOH preserved	A	NA		2.2	Y	Absent		PA-8260HLW(14)
L2167531-21B	Vial water preserved	B	NA		2.1	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-21C	Vial water preserved	B	NA		2.1	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-21D	Plastic 2oz unpreserved for TS	B	NA		2.1	Y	Absent		TS(7)
L2167531-21E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.1	Y	Absent		PB-TI(180)
L2167531-21F	Glass 120ml/4oz unpreserved	B	NA		2.1	Y	Absent		PA-PAH(14)
L2167531-22A	Vial HCl preserved	A	NA		2.2	Y	Absent		PA-8260(14)
L2167531-22B	Vial HCl preserved	A	NA		2.2	Y	Absent		PA-8260(14)
L2167531-22C	Vial HCl preserved	A	NA		2.2	Y	Absent		8011(14)
L2167531-22D	Plastic 250ml HNO3 preserved	A	<2	<2	2.2	Y	Absent		PB-6020T-PPB(180)
L2167531-22E	Amber 250ml unpreserved	A	7	7	2.2	Y	Absent		PA-PAHSIM-LVI(7)
L2167531-22F	Amber 250ml unpreserved	A	7	7	2.2	Y	Absent		PA-PAHSIM-LVI(7)
L2167531-23A	Vial HCl preserved	A	NA		2.2	Y	Absent		PA-8260(14)
L2167531-23B	Vial HCl preserved	A	NA		2.2	Y	Absent		PA-8260(14)
L2167531-23C	Vial HCl preserved	A	NA		2.2	Y	Absent		8011(14)
L2167531-23D	Plastic 250ml HNO3 preserved	A	<2	<2	2.2	Y	Absent		PB-6020T-PPB(180)
L2167531-23E	Amber 250ml unpreserved	A	7	7	2.2	Y	Absent		PA-PAHSIM-LVI(7)
L2167531-23F	Amber 250ml unpreserved	A	7	7	2.2	Y	Absent		PA-PAHSIM-LVI(7)
L2167531-24A	Vial MeOH preserved	D	NA		2.5	Y	Absent		PA-8260HLW(14)
L2167531-24B	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-24C	Vial water preserved	D	NA		2.5	Y	Absent	09-DEC-21 13:08	PA-8260HLW(14)
L2167531-24D	Plastic 2oz unpreserved for TS	D	NA		2.5	Y	Absent		TS(7)
L2167531-25A	Vial HCl preserved	A	NA		2.2	Y	Absent		PA-8260(14)
L2167531-25B	Vial HCl preserved	A	NA		2.2	Y	Absent		PA-8260(14)
L2167531-25C	Vial Na2S2O3 preserved	A	NA		2.2	Y	Absent		8011(14)
L2167531-25D	Vial Na2S2O3 preserved	A	NA		2.2	Y	Absent		8011(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
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Project Name: PHILADELPHIA REFINERY
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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167531

Project Number: 200.00135.005.03

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

L2167531

CHAIN OF CUSTODY

PAGE 1 OF 3



Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 12/9/21 ALPHA Job #: L2167531

Report Information **Data Deliverables** **Billing Information**

FAX EMAIL Same as Client Info PO #: 3894

ADEx Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist	SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed <input type="checkbox"/> Lab to do Preservation <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES
		Date	Time															
67531-01	PB-253-11-5501	12/8	0910	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-02	PB-253-12-5501		0920	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-03	PB-253-13-5501		0935	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-04	PB-253-14-5501		0950	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-05	PB-253-15-5501		1000	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-06	PB-253-16-5501		1015	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-07	PB-253-17-5501		1030	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-08	PB-883-08-5501		1135	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-09	PB-883-09-5501		1155	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-10	PB-883-10-5501		1215	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By: [Signature] Date/Time: 12/8/21 1533

Received By: [Signature] Date/Time: 12/8/21 1730

[Signature] Date/Time: 12/8/21 2050

[Signature] Date/Time: 12/9/21 0520

[Signature] Date/Time: 12/8/21 1530

[Signature] Date/Time: 12-8-21 1730

[Signature] Date/Time: 12/8/21 21:00


[Signature] Date/Time: 12/9/21 0815

[Signature] Date/Time: 12/09/21 0520

FORM NO: 01-07-02 (rev. 5-14-03)

CHAIN OF CUSTODY

PAGE 2 OF 3



Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Date Rec'd in Lab: 12/9/20

ALPHA Job #: L2167531

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: _____

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Report Information

FAX EMAIL

ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program: _____ Criteria: _____

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: _____ Time: _____

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)

Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										SAMPLE HANDLING	TOTAL # BOTTLES		
		Date	Time			PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol			VOC portion of PADEP Shortlist	
67531-11	PB-883-11-SS01	12/8	1245	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	9
-12	PB-883-12-SS01		1300	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	6
-13	PB-883-13-SS01		1310	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-14	PB-883-14-SS01		1320	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-15	PB-883-16-SS01		1325	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-16	PB-883-17-SS01		1340	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-17	PB-883-18-SS01		1350	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-18	PB-883-19-SS01		1400	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-19	PB-883-22-SS01		1405			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
-20	PB-883-23-SS01		1415			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Container Type	G	G	G	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	12/8 1553	<i>[Signature]</i>	12/8/21 15:30
<i>[Signature]</i>	12/8/21 1730	<i>[Signature]</i>	12-8 1730
<i>[Signature]</i>	12/8 2030	<i>[Signature]</i>	12/8/21 21:00
<i>[Signature]</i>	12/9/21	<i>[Signature]</i>	12/9/21 03:05
<i>[Signature]</i>	12/9/21 05:20	<i>[Signature]</i>	12/9/21 05:20

FORM NO. 01-010-AJ2 (Rev. 5-JAN-12)

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.



CHAIN OF CUSTODY

PAGE 3 OF 3

Westborough, MA
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA
TEL: 508-822-9300
FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
Address: 2127 Hamilton Avenue
Trenton, NJ 08619
Phone: 215-901-4974

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 12/9/21

ALPHA Job #: L2167531

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client Info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist (0-5)	SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed Preservation <input type="checkbox"/> Lab to do <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES
		Date	Time															
67531-21	PB-883-24-5501	12/8	1430	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		0
-22	FB-211208-1		1440	W	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		7
-23	FB-211208-2		1445	W	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		7
-24	DUP-24		-	S	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		4
-25	PB-211208		-	W	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	12/8/21 1533	<i>[Signature]</i>	12/8/21 1535
<i>[Signature]</i>	12/8/21 1730	<i>[Signature]</i>	12/8/21 1730
<i>[Signature]</i>	12/9/21 1250	<i>[Signature]</i>	12/9/21 1250

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-010-K (Rev. 8-2014)

PADEP Short List Analytical List:

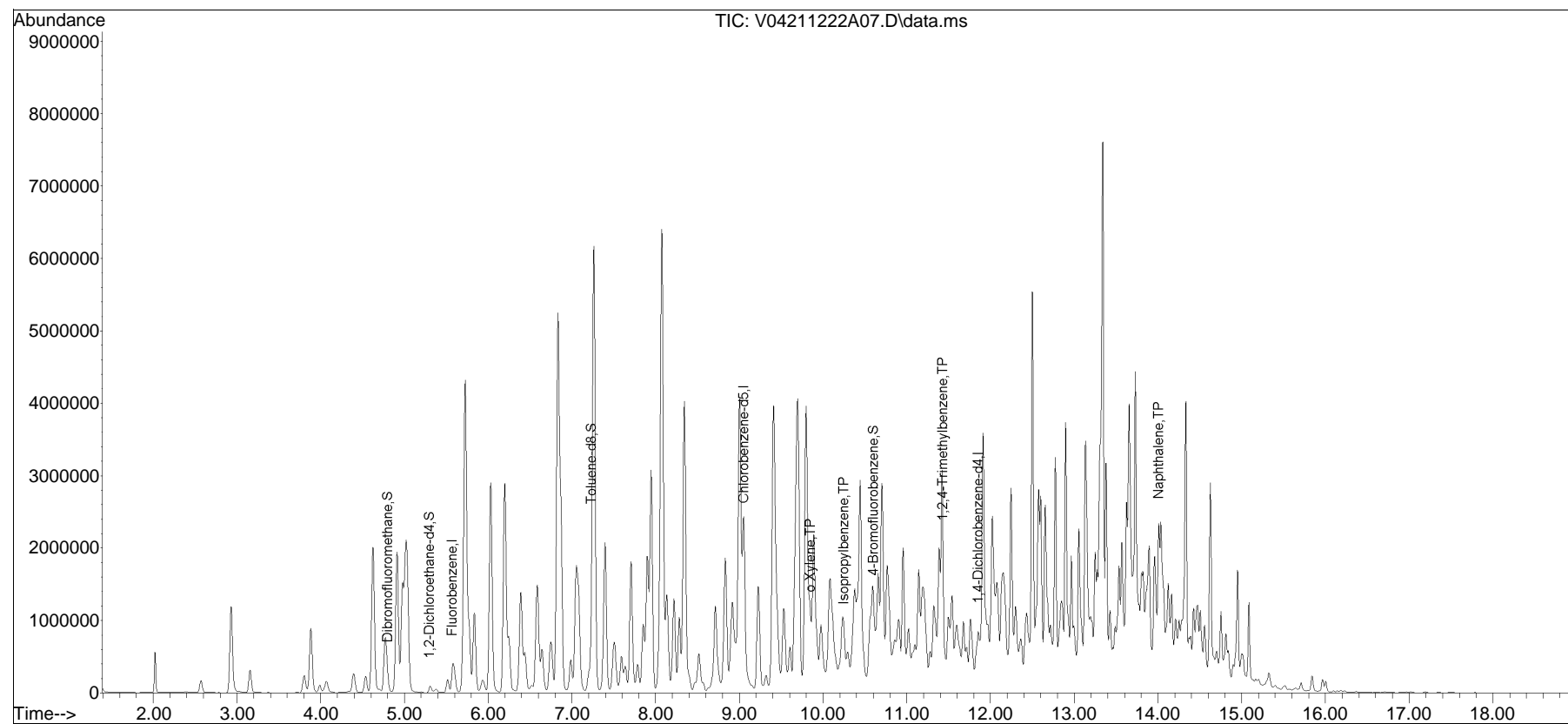
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
5. Fuel Oil Nos. 4, 5, and 6. and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
6. Waste Oil – benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, lead

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2021\211222A\
Data File : V04211222A07.D
Acq On : 22 Dec 2021 8:04 am
Operator : VOA104:MV
Sample : L2167531-17,31H,4.66,5,0.100,,A
Misc : WG1586695,18128ICAL
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 22 12:12:01 2021
Quant Method : I:\VOLATILES\VOA104\2021\211222A\V104_211214A_8260D.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Dec 14 09:33:11 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list22A\V04211222A01.D•





ANALYTICAL REPORT

Lab Number:	L2167657
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	12/28/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2167657-01	PB-191-01-SS01	SOIL	PHILADELPHIA, PA	12/09/21 09:20	12/09/21
L2167657-02	PB-191-02-SS01	SOIL	PHILADELPHIA, PA	12/09/21 09:40	12/09/21
L2167657-03	PB-191-04-SS01	SOIL	PHILADELPHIA, PA	12/09/21 09:55	12/09/21
L2167657-04	PB-191-05-SS01	SOIL	PHILADELPHIA, PA	12/09/21 10:20	12/09/21
L2167657-05	PB-191-06-SS01	SOIL	PHILADELPHIA, PA	12/09/21 10:30	12/09/21
L2167657-06	PB-191-07-SS01	SOIL	PHILADELPHIA, PA	12/09/21 10:45	12/09/21
L2167657-07	PB-191-08-SS01	SOIL	PHILADELPHIA, PA	12/09/21 10:55	12/09/21
L2167657-08	DUP-25	SOIL	PHILADELPHIA, PA	12/09/21 00:00	12/09/21
L2167657-09	FB-211209	WATER	PHILADELPHIA, PA	12/09/21 11:00	12/09/21
L2167657-10	TB-211209	WATER	PHILADELPHIA, PA	12/09/21 00:00	12/09/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2167657-02: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (134%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167657-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (163%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167657-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (146%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167657-06: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167657-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (136%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2167657-05D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 12/28/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-01
 Client ID: PB-191-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:20
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 10:37
 Analyst: MV
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00073	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00079	1
1,2-Dibromoethane	ND		mg/kg	0.00073	0.00043	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00081	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-02
 Client ID: PB-191-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:40
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 11:28
 Analyst: MV
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0049	0.00049	1
Benzene	0.0094		mg/kg	0.0012	0.00040	1
1,2-Dichloroethane	ND		mg/kg	0.0024	0.00063	1
Toluene	0.0015	J	mg/kg	0.0024	0.0013	1
1,2-Dibromoethane	ND		mg/kg	0.0012	0.00072	1
Ethylbenzene	0.0012	J	mg/kg	0.0024	0.00034	1
p/m-Xylene	0.0028	J	mg/kg	0.0049	0.0014	1
o-Xylene	0.0019	J	mg/kg	0.0024	0.00071	1
Xylenes, Total	0.0047	J	mg/kg	0.0024	0.00071	1
Isopropylbenzene	0.0022	J	mg/kg	0.0024	0.00027	1
1,3,5-Trimethylbenzene	0.00054	J	mg/kg	0.0049	0.00047	1
1,2,4-Trimethylbenzene	0.0013	J	mg/kg	0.0049	0.00082	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	125		70-130
4-Bromofluorobenzene	134	Q	70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-03
 Client ID: PB-191-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 19:07
 Analyst: JC
 Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.0012		mg/kg	0.00065	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00065	0.00038	1
Ethylbenzene	0.0010	J	mg/kg	0.0013	0.00018	1
p/m-Xylene	0.0019	J	mg/kg	0.0026	0.00072	1
o-Xylene	0.0013		mg/kg	0.0013	0.00038	1
Xylenes, Total	0.0032	J	mg/kg	0.0013	0.00038	1
Isopropylbenzene	0.0015		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.0013	J	mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	0.0023	J	mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	163	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-04
 Client ID: PB-191-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:20
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 19:28
 Analyst: JC
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.00027	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-05
 Client ID: PB-191-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:30
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 11:52
 Analyst: MV
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0036		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.00046	J	mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	146	Q	70-130
Dibromofluoromethane	102		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-06
 Client ID: PB-191-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:45
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 01:22
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0043	0.00043	1
Benzene	ND		mg/kg	0.0011	0.00036	1
1,2-Dichloroethane	ND		mg/kg	0.0022	0.00055	1
Toluene	ND		mg/kg	0.0022	0.0012	1
1,2-Dibromoethane	ND		mg/kg	0.0011	0.00063	1
Ethylbenzene	ND		mg/kg	0.0022	0.00030	1
p/m-Xylene	ND		mg/kg	0.0043	0.0012	1
o-Xylene	ND		mg/kg	0.0022	0.00063	1
Xylenes, Total	ND		mg/kg	0.0022	0.00063	1
Isopropylbenzene	ND		mg/kg	0.0022	0.00023	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0043	0.00042	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0043	0.00072	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-07
 Client ID: PB-191-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 01:42
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00030	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	0.00021	J	mg/kg	0.0011	0.00016	1
p/m-Xylene	0.0023		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.0023		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0030		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00066	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.0031		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	136	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-08
 Client ID: DUP-25
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 00:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 11:02
 Analyst: MV
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00071	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00077	1
1,2-Dibromoethane	ND		mg/kg	0.00071	0.00041	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00079	1
o-Xylene	ND		mg/kg	0.0014	0.00041	1
Xylenes, Total	ND		mg/kg	0.0014	0.00041	1
Isopropylbenzene	0.0082		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-09
 Client ID: FB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 11:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/20/21 16:49
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-09
 Client ID: FB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 11:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 10:01
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-10
 Client ID: TB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 00:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/20/21 16:58
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-10
 Client ID: TB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 00:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/23/21 09:02
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	114		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 12/20/21 14:42
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 09-10 Batch: WG1585549-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/19/21 08:42
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 09 Batch: WG1585679-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/20/21 09:21
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-02,05,08 Batch: WG1586011-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/19/21 15:42
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03-04,06-07 Batch: WG1586116-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	86		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/23/21 08:15
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 10 Batch: WG1587235-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	112		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 09-10 Batch: WG1585549-2									
1,2-Dibromoethane	98		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 09 Batch: WG1585679-3 WG1585679-4								
Methyl tert butyl ether	83		89		63-130	7		20
Benzene	96		100		70-130	4		20
1,2-Dichloroethane	88		88		70-130	0		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		110		70-130	10		20
p/m-Xylene	105		110		70-130	5		20
o-Xylene	100		105		70-130	5		20
Isopropylbenzene	99		110		70-130	11		20
1,3,5-Trimethylbenzene	98		100		64-130	2		20
1,2,4-Trimethylbenzene	96		100		70-130	4		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	93		95		70-130
Toluene-d8	103		102		70-130
4-Bromofluorobenzene	97		100		70-130
Dibromofluoromethane	95		94		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-02,05,08 Batch: WG1586011-3 WG1586011-4								
Methyl tert butyl ether	106		106		66-130	0		30
Benzene	110		108		70-130	2		30
1,2-Dichloroethane	103		104		70-130	1		30
Toluene	108		108		70-130	0		30
1,2-Dibromoethane	99		104		70-130	5		30
Ethylbenzene	111		111		70-130	0		30
p/m-Xylene	119		119		70-130	0		30
o-Xylene	117		117		70-130	0		30
Isopropylbenzene	114		111		70-130	3		30
1,3,5-Trimethylbenzene	115		113		70-130	2		30
1,2,4-Trimethylbenzene	116		114		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	94		96		70-130
Dibromofluoromethane	102		103		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03-04,06-07 Batch: WG1586116-3 WG1586116-4								
Methyl tert butyl ether	84		93		66-130	10		30
Benzene	100		88		70-130	13		30
1,2-Dichloroethane	78		75		70-130	4		30
Toluene	99		86		70-130	14		30
1,2-Dibromoethane	81		85		70-130	5		30
Ethylbenzene	98		84		70-130	15		30
p/m-Xylene	100		86		70-130	15		30
o-Xylene	97		86		70-130	12		30
Isopropylbenzene	102		85		70-130	18		30
1,3,5-Trimethylbenzene	97		83		70-130	16		30
1,2,4-Trimethylbenzene	95		82		70-130	15		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	80		83		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	94		95		70-130
Dibromofluoromethane	85		83		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 10 Batch: WG1587235-3 WG1587235-4								
Methyl tert butyl ether	92		99		63-130	7		20
Benzene	100		110		70-130	10		20
1,2-Dichloroethane	110		120		70-130	9		20
Toluene	100		110		70-130	10		20
Ethylbenzene	100		110		70-130	10		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	100		105		70-130	5		20
Isopropylbenzene	100		110		70-130	10		20
1,3,5-Trimethylbenzene	97		100		64-130	3		20
1,2,4-Trimethylbenzene	96		99		70-130	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	112		114		70-130
Toluene-d8	105		104		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	103		105		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-01
 Client ID: PB-191-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:20
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 21:05
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 12:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.039	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.11	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.22		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.17		mg/kg	0.12	0.022	1
Chrysene	0.16		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.19		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.15	J	mg/kg	0.16	0.048	1
Indeno(1,2,3-cd)pyrene	0.10	J	mg/kg	0.16	0.027	1
Benzo(ghi)perylene	0.088	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	61		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-02
 Client ID: PB-191-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:40
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 21:28
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.063	J	mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.092	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.10	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.077	J	mg/kg	0.12	0.023	1
Chrysene	0.080	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.089	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.071	J	mg/kg	0.16	0.050	1
Indeno(1,2,3-cd)pyrene	0.055	J	mg/kg	0.16	0.029	1
Benzo(ghi)perylene	0.062	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	54		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-03
 Client ID: PB-191-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 21:52
 Analyst: CMM
 Percent Solids: 74%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.10	J	mg/kg	0.22	0.027	1
Fluorene	0.054	J	mg/kg	0.22	0.022	1
Phenanthrene	0.19		mg/kg	0.13	0.027	1
Anthracene	0.049	J	mg/kg	0.13	0.043	1
Pyrene	0.14		mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.095	J	mg/kg	0.13	0.025	1
Chrysene	0.095	J	mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.099	J	mg/kg	0.13	0.038	1
Benzo(a)pyrene	0.076	J	mg/kg	0.18	0.054	1
Indeno(1,2,3-cd)pyrene	0.056	J	mg/kg	0.18	0.031	1
Benzo(ghi)perylene	0.056	J	mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-04
 Client ID: PB-191-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:20
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 04:18
 Analyst: CMM
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.14	0.024	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	76		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-05 D
 Client ID: PB-191-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:30
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/23/21 11:44
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 12:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	1.0	0.12	5
Fluorene	ND		mg/kg	1.0	0.098	5
Phenanthrene	ND		mg/kg	0.60	0.12	5
Anthracene	ND		mg/kg	0.60	0.20	5
Pyrene	ND		mg/kg	0.60	0.10	5
Benzo(a)anthracene	ND		mg/kg	0.60	0.11	5
Chrysene	ND		mg/kg	0.60	0.10	5
Benzo(b)fluoranthene	ND		mg/kg	0.60	0.17	5
Benzo(a)pyrene	ND		mg/kg	0.80	0.24	5
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.80	0.14	5
Benzo(ghi)perylene	ND		mg/kg	0.80	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-06
 Client ID: PB-191-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:45
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 22:16
 Analyst: CMM
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 12:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.23		mg/kg	0.20	0.024	1
Fluorene	0.061	J	mg/kg	0.20	0.019	1
Phenanthrene	0.77		mg/kg	0.12	0.024	1
Anthracene	0.16		mg/kg	0.12	0.039	1
Pyrene	0.44		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.21		mg/kg	0.12	0.022	1
Chrysene	0.26		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.17		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.18		mg/kg	0.16	0.049	1
Indeno(1,2,3-cd)pyrene	0.11	J	mg/kg	0.16	0.028	1
Benzo(ghi)perylene	0.19		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-07
 Client ID: PB-191-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 22:39
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.059	J	mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.084	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.070	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.047	J	mg/kg	0.12	0.022	1
Chrysene	0.052	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.054	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Indeno(1,2,3-cd)pyrene	0.031	J	mg/kg	0.16	0.027	1
Benzo(ghi)perylene	0.043	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-08
 Client ID: DUP-25
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 00:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 23:02
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 12:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.044	J	mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.021	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.16	0.028	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-09
 Client ID: FB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 11:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/19/21 21:53
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 12/14/21 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	29		21-120
Phenol-d6	31		10-120
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	52		15-120
2,4,6-Tribromophenol	38		10-120
4-Terphenyl-d14	67		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 12/19/21 18:23
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 12/14/21 15:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 09 Batch: WG1583217-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	29		21-120
Phenol-d6	35		10-120
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	63		15-120
2,4,6-Tribromophenol	34		10-120
4-Terphenyl-d14	73		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 12/20/21 23:53
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-08 Batch: WG1585193-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.13	0.023
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	86		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 09 Batch: WG1583217-2 WG1583217-3								
Naphthalene	53		68		40-140	25		40
Fluorene	64		73		40-140	13		40
Phenanthrene	65		68		40-140	5		40
Anthracene	65		68		40-140	5		40
Pyrene	71		75		26-127	5		40
Benzo(a)anthracene	74		78		40-140	5		40
Chrysene	69		68		40-140	1		40
Benzo(b)fluoranthene	71		81		40-140	13		40
Benzo(a)pyrene	73		76		40-140	4		40
Indeno(1,2,3-cd)pyrene	75		82		40-140	9		40
Benzo(ghi)perylene	74		79		40-140	7		40

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	40		49		21-120
Phenol-d6	38		46		10-120
Nitrobenzene-d5	61		72		23-120
2-Fluorobiphenyl	55		67		15-120
2,4,6-Tribromophenol	58		60		10-120
4-Terphenyl-d14	73		76		41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-08 Batch: WG1585193-2 WG1585193-3								
Naphthalene	60		66		40-140	10		50
Fluorene	64		71		40-140	10		50
Phenanthrene	64		69		40-140	8		50
Anthracene	64		69		40-140	8		50
Pyrene	65		72		35-142	10		50
Benzo(a)anthracene	62		70		40-140	12		50
Chrysene	64		70		40-140	9		50
Benzo(b)fluoranthene	66		74		40-140	11		50
Benzo(a)pyrene	62		69		40-140	11		50
Indeno(1,2,3-cd)pyrene	65		75		40-140	14		50
Benzo(ghi)perylene	64		72		40-140	12		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	62		72		23-120
2-Fluorobiphenyl	61		69		30-120
4-Terphenyl-d14	68		76		18-120



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-01

Date Collected: 12/09/21 09:20

Client ID: PB-191-01-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	110		mg/kg	2.34	0.126	1	12/21/21 07:10	12/23/21 18:20	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-02

Date Collected: 12/09/21 09:40

Client ID: PB-191-02-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	46.8		mg/kg	2.36	0.126	1	12/21/21 07:10	12/23/21 18:25	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-03

Date Collected: 12/09/21 09:55

Client ID: PB-191-04-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	295		mg/kg	2.62	0.140	1	12/21/21 07:10	12/23/21 18:38	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-04

Date Collected: 12/09/21 10:20

Client ID: PB-191-05-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	12.8		mg/kg	10.5	0.565	5	12/21/21 07:10	12/27/21 14:02	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-05

Date Collected: 12/09/21 10:30

Client ID: PB-191-06-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	26.5		mg/kg	2.38	0.128	1	12/21/21 07:10	12/23/21 18:47	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-06

Date Collected: 12/09/21 10:45

Client ID: PB-191-07-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	176		mg/kg	4.59	0.246	2	12/21/21 07:10	12/27/21 10:13	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-07

Date Collected: 12/09/21 10:55

Client ID: PB-191-08-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	84.5		mg/kg	2.30	0.123	1	12/21/21 07:10	12/23/21 18:56	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-08

Date Collected: 12/09/21 00:00

Client ID: DUP-25

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	218		mg/kg	4.72	0.253	2	12/21/21 07:10	12/27/21 10:17	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-09

Date Collected: 12/09/21 11:00

Client ID: FB-211209

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/19/21 05:13	12/22/21 01:07	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 09 Batch: WG1585121-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	12/19/21 05:13	12/22/21 01:02	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-08 Batch: WG1585681-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	12/21/21 07:10	12/23/21 16:49	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 09 Batch: WG1585121-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-08 Batch: WG1585681-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 09 QC Batch ID: WG1585121-3 WG1585121-4 QC Sample: L2169319-04 Client ID: MS Sample												
Lead, Total	ND	530	516.2	97		495.5	93		75-125	4		20
Total Metals - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1585681-3 QC Sample: L2165811-11 Client ID: MS Sample												
Lead, Total	62.2	51.6	77.5	30	Q	-	-		75-125	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2167657

Report Date: 12/28/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1585681-4 QC Sample: L2165811-11 Client ID: DUP Sample						
Lead, Total	62.2	41.2	mg/kg	41	Q	20

**Lab Serial Dilution
Analysis
Batch Quality Control**

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1585681-6 QC Sample: L2165811-11 Client ID: DUP Sample						
Lead, Total	62.2	82.9	mg/kg	33	Q	20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-01

Date Collected: 12/09/21 09:20

Client ID: PB-191-01-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-02
 Client ID: PB-191-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:40
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.6		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-03

Date Collected: 12/09/21 09:55

Client ID: PB-191-04-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.9		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-04
 Client ID: PB-191-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:20
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-05
 Client ID: PB-191-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:30
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-06

Date Collected: 12/09/21 10:45

Client ID: PB-191-07-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-07
 Client ID: PB-191-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167657**Project Number:** 200.00135.005.03**Report Date:** 12/28/21**SAMPLE RESULTS**

Lab ID: L2167657-08

Date Collected: 12/09/21 00:00

Client ID: DUP-25

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2167657

Report Date: 12/28/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1581718-1 QC Sample: L2167657-01 Client ID: PB-191-01-SS01						
Solids, Total	84.0	83.9	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167657**Project Number:** 200.00135.005.03**Report Date:** 12/28/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167657-01A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2167657-01B	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-01C	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-01D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2167657-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2167657-01F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2167657-02A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2167657-02B	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-02C	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-02D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2167657-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2167657-02F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2167657-03A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2167657-03B	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-03C	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-03D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2167657-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2167657-03F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2167657-04A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2167657-04B	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-04C	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-04D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Serial_No:12282113:25
Lab Number: L2167657
Report Date: 12/28/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167657-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2167657-04F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2167657-05A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2167657-05B	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-05C	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-05D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2167657-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2167657-05F	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		PA-PAH(14)
L2167657-06A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2167657-06B	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-06C	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-06D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2167657-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2167657-06F	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		PA-PAH(14)
L2167657-07A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2167657-07B	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-07C	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-07D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2167657-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2167657-07F	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		PA-PAH(14)
L2167657-08A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2167657-08B	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-08C	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-08D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2167657-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2167657-08F	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		PA-PAH(14)
L2167657-09A	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2167657-09B	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Serial_No:12282113:25
Lab Number: L2167657
Report Date: 12/28/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167657-09C	Vial HCl preserved	A	NA		3.4	Y	Absent		8011(14)
L2167657-09D	Plastic 250ml HNO3 preserved	A	<2	<2	3.4	Y	Absent		PB-6020T-PPB(180)
L2167657-09E	Amber 250ml unpreserved	A	7	7	3.4	Y	Absent		PA-8270SIM-LVI(7)
L2167657-09F	Amber 250ml unpreserved	A	7	7	3.4	Y	Absent		PA-8270SIM-LVI(7)
L2167657-10A	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2167657-10B	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2167657-10C	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		8011(14)
L2167657-10D	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		8011(14)

*Values in parentheses indicate holding time in days



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1



Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
 Address: 2127 Hamilton Avenue
 Trenton, NJ 08619
 Phone: 215-901-4974

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Fax: Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 12/10/21

ALPHA Job #: L22167657

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist (1-6)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								

PADEP Short List Analytical List:

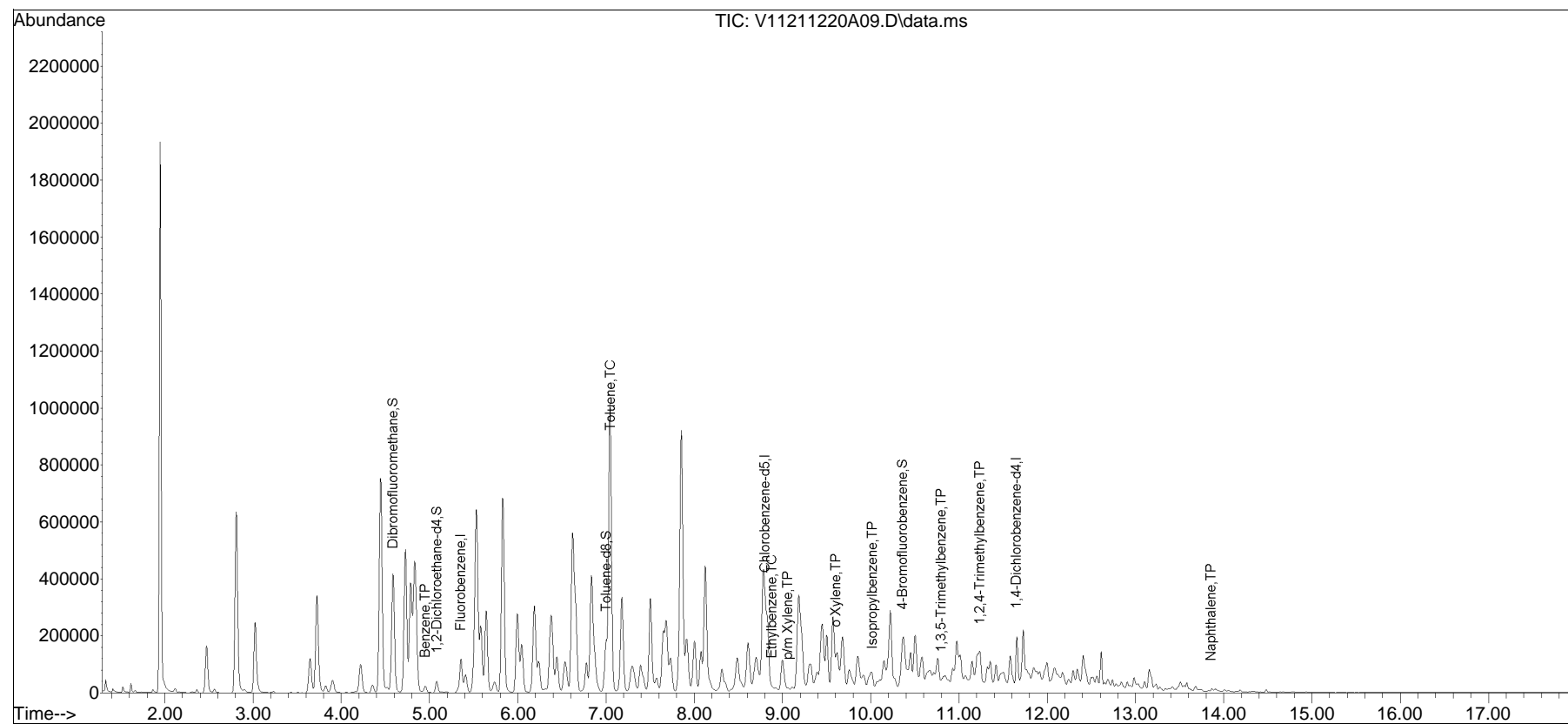
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
 2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
 3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
 4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
 5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
 6. Waste Oil – benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, lead
-
-

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\211220A\
 Data File : V11211220A09.D
 Acq On : 20 Dec 2021 11:28 am
 Operator : VOA111:MV
 Sample : L2167657-02,31,2.54,5,,C
 Misc : WG1586011,ICAL18566
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 21 08:39:50 2021
 Quant Method : I:\VOLATILES\VOA111\2021\211220A\V111_211214A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Tue Dec 14 12:27:59 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20A\V11211220A01.D•

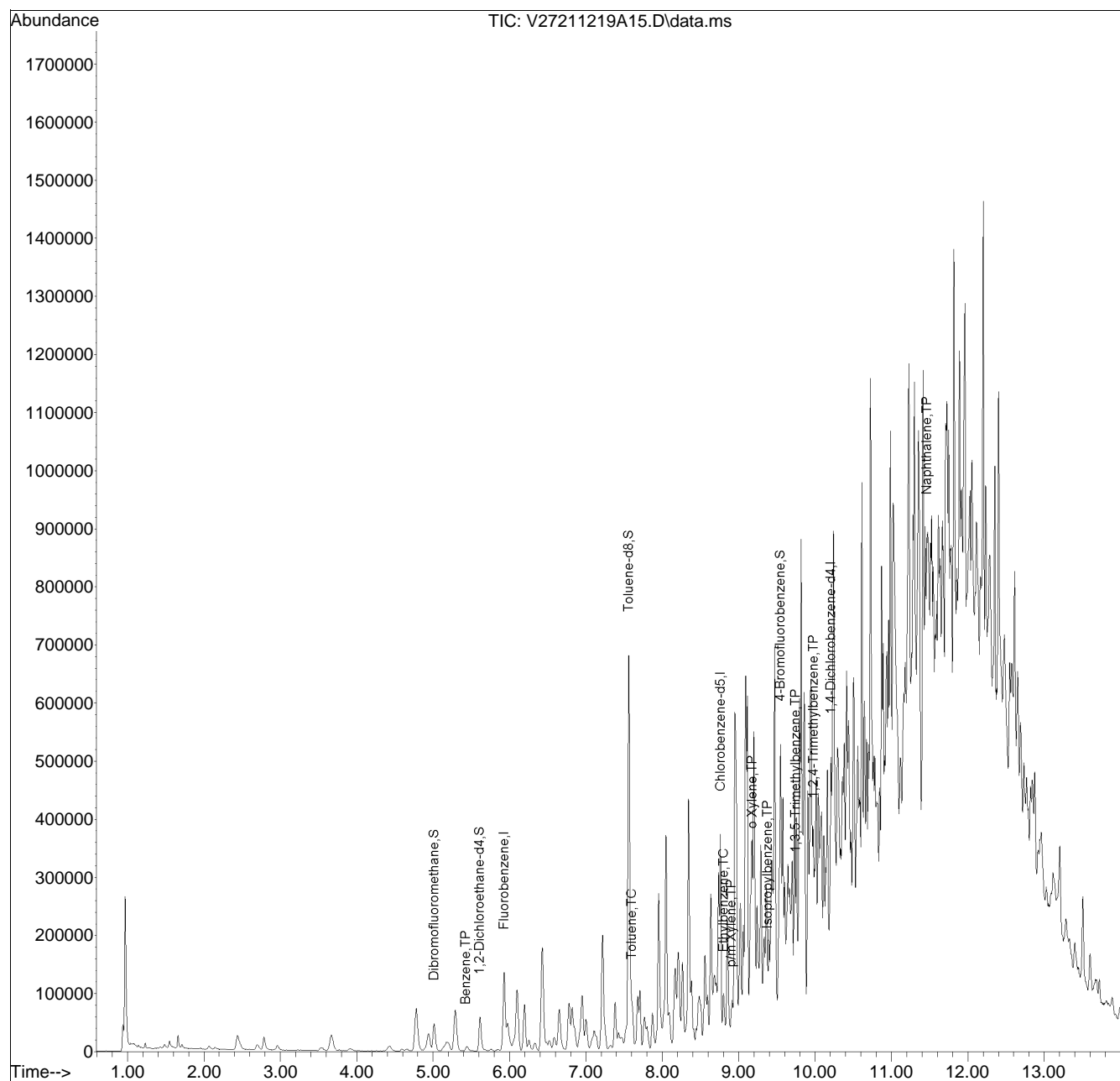


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211219A\
Data File : V27211219A15.D
Acq On : 19 Dec 2021 07:07 pm
Operator : VOA127:JC
Sample : L2167657-03,31,5.23,5,,B
Misc : WG1586116,ICAL18439
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 20 08:26:11 2021
Quant Method : I:\VOLATILES\VOA127\2021\211219A\V127_211103N_8260D.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Nov 04 16:46:12 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19A\V27211219A01.D•

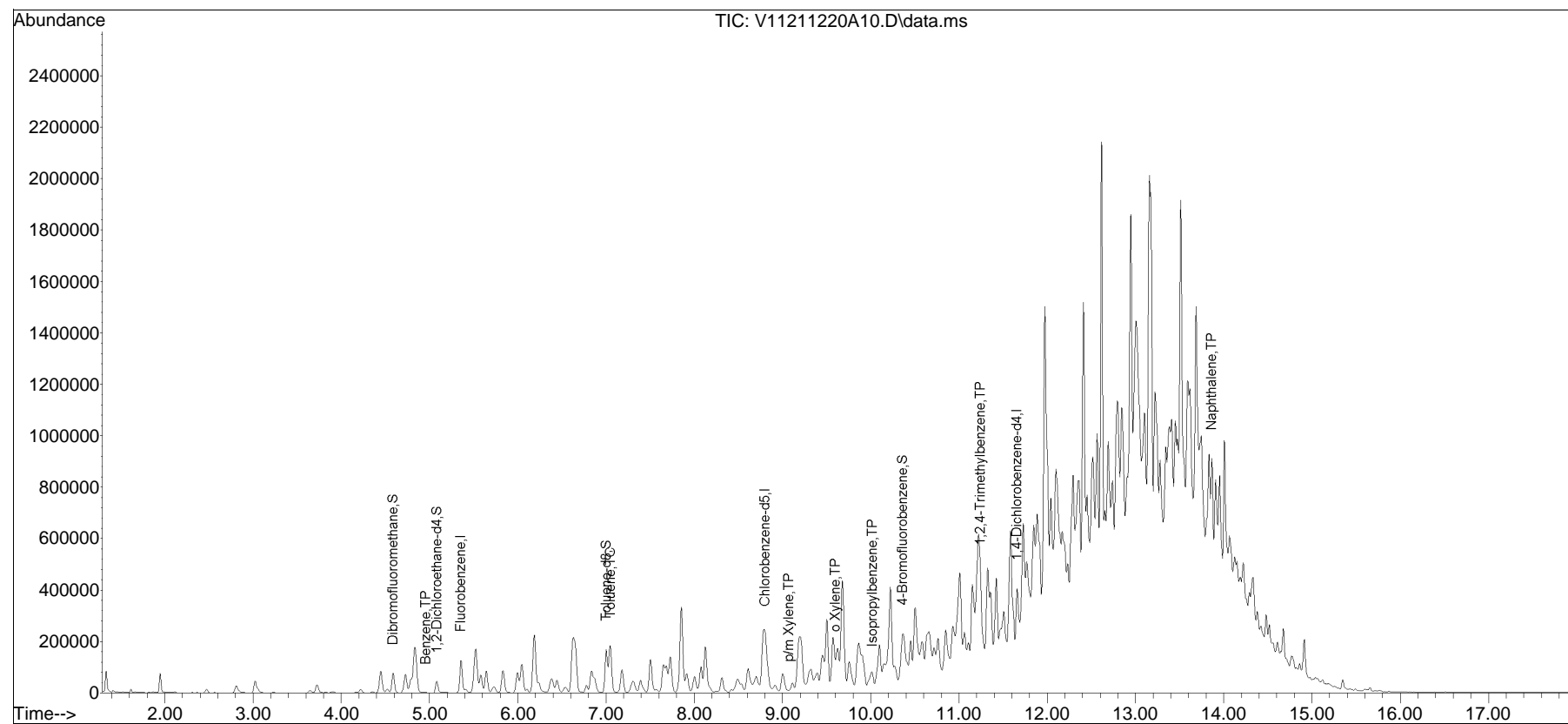


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\211220A\
Data File : V11211220A10.D
Acq On : 20 Dec 2021 11:52 am
Operator : VOA111:MV
Sample : L2167657-05,31,5.29,5,,C
Misc : WG1586011,ICAL18566
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 21 08:40:08 2021
Quant Method : I:\VOLATILES\VOA111\2021\211220A\V111_211214A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Dec 14 12:27:59 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20A\V11211220A01.D•

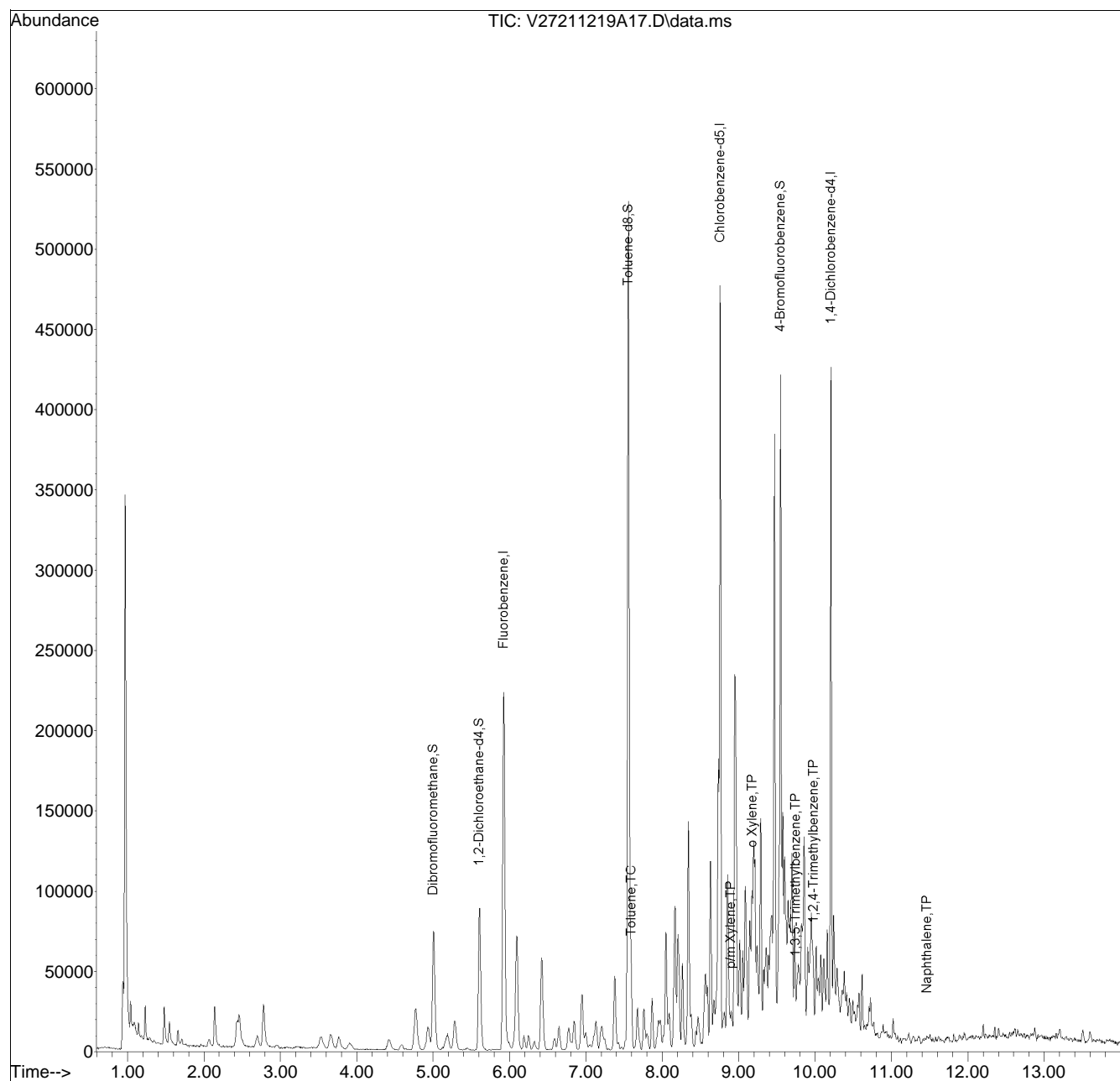


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211219A\
Data File : V27211219A17.D
Acq On : 20 Dec 2021 01:22 am
Operator : VOA127:JC
Sample : L2167657-06,31,2.84,5,,B
Misc : WG1586116,ICAL18439
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 20 08:26:26 2021
Quant Method : I:\VOLATILES\VOA127\2021\211219A\V127_211103N_8260D.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Nov 04 16:46:12 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19A\V27211219A01.D•

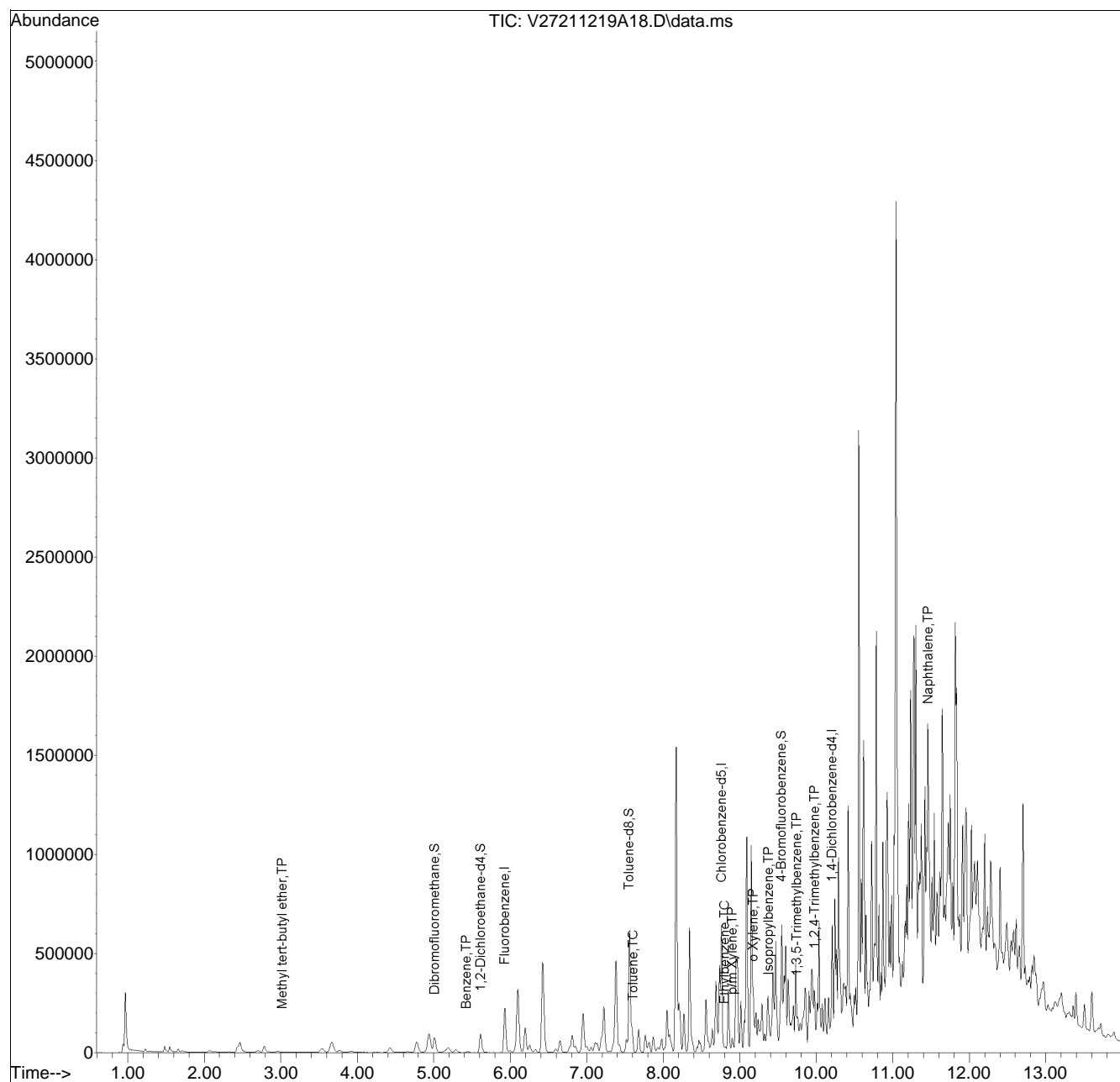


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211219A\
 Data File : V27211219A18.D
 Acq On : 20 Dec 2021 01:42 am
 Operator : VOA127:JC
 Sample : L2167657-07,31,5.26,5,,B
 Misc : WG1586116,ICAL18439
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 20 08:26:43 2021
 Quant Method : I:\VOLATILES\VOA127\2021\211219A\V127_211103N_8260D.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Nov 04 16:46:12 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19A\V27211219A01.D•





ANALYTICAL REPORT

Lab Number:	L2236582
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/15/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236582-01	PB-847-01-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:00	07/08/22
L2236582-02	PB-847-02-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:10	07/08/22
L2236582-03	PB-847-03-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:20	07/08/22
L2236582-04	PB-847-04-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:30	07/08/22
L2236582-05	PB-847-05-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:40	07/08/22
L2236582-06	PB-847-06-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:50	07/08/22
L2236582-07	PB-847-07-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:00	07/08/22
L2236582-08	PB-847-08-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:10	07/08/22
L2236582-09	PB-847-09-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:20	07/08/22
L2236582-10	PB-847-10-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:30	07/08/22
L2236582-11	PB-847-11-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:40	07/08/22
L2236582-12	PB-847-12-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:50	07/08/22
L2236582-13	PB-847-13-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:00	07/08/22
L2236582-14	PB-847-14-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:10	07/08/22
L2236582-15	PB-847-15-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:20	07/08/22
L2236582-16	PB-847-16-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:30	07/08/22
L2236582-17	PB-847-17-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:40	07/08/22
L2236582-18	FB-070822-1	WATER	PHILADELPHIA, PA	07/08/22 13:00	07/08/22
L2236582-19	FB-070822-2	WATER	PHILADELPHIA, PA	07/08/22 13:05	07/08/22
L2236582-20	DUP-37	SOIL	PHILADELPHIA, PA	07/08/22 00:00	07/08/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2236582-12: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (268%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236582-13D, -14D, and -15D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2236582-13D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (171%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236582-14D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (150%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236582-15D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (159%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236582-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (202%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2236582-15D: The sample has elevated detection limits due to the dilution required by the sample matrix.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

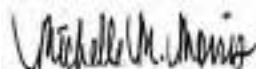
Case Narrative (continued)

Total Metals

L2236582-07, -10, -11, -12, -14, -15, and -17: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 07/15/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-01
 Client ID: PB-847-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 13:18
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-02
 Client ID: PB-847-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 13:48
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-03
 Client ID: PB-847-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 14:17
 Analyst: JC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-04
 Client ID: PB-847-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 14:47
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	ND		mg/kg	0.00088	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-05
 Client ID: PB-847-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 15:17
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-06
 Client ID: PB-847-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 15:46
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	ND		mg/kg	0.00086	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00086	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00086	0.00025	1
Xylenes, Total	ND		mg/kg	0.00086	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00086	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-07
 Client ID: PB-847-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 16:15
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.00029	J	mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-08
 Client ID: PB-847-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 16:45
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-09
 Client ID: PB-847-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 17:14
 Analyst: JC
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00024	J	mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-10
 Client ID: PB-847-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 17:43
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00029	1
Xylenes, Total	ND		mg/kg	0.00098	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-11
 Client ID: PB-847-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 18:11
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0035		mg/kg	0.0020	0.00020	1
Benzene	0.00047	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	0.00012	J	mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-12
 Client ID: PB-847-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:46
 Analyst: MKS
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	0.0028		mg/kg	0.00087	0.00012	1
p/m-Xylene	0.00065	J	mg/kg	0.0017	0.00048	1
o-Xylene	0.00025	J	mg/kg	0.00087	0.00025	1
Xylenes, Total	0.00090	J	mg/kg	0.00087	0.00025	1
Isopropylbenzene	0.013		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	0.054		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	0.020		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	120		70-130
4-Bromofluorobenzene	268	Q	70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-13 D
 Client ID: PB-847-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 01:06
 Analyst: MKS
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.43	0.043	4
Benzene	0.051	J	mg/kg	0.11	0.036	4
1,2-Dichloroethane	ND		mg/kg	0.21	0.055	4
Toluene	ND		mg/kg	0.21	0.12	4
1,2-Dibromoethane	ND		mg/kg	0.11	0.063	4
Ethylbenzene	0.20	J	mg/kg	0.21	0.030	4
p/m-Xylene	0.15	J	mg/kg	0.43	0.12	4
o-Xylene	0.080	J	mg/kg	0.21	0.062	4
Xylenes, Total	0.23	J	mg/kg	0.21	0.062	4
Isopropylbenzene	0.94		mg/kg	0.21	0.023	4
1,3,5-Trimethylbenzene	1.4		mg/kg	0.43	0.041	4
1,2,4-Trimethylbenzene	2.2		mg/kg	0.43	0.072	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	171	Q	70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-14 D
 Client ID: PB-847-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 19:37
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.50	0.051	4
Benzene	ND		mg/kg	0.12	0.042	4
1,2-Dichloroethane	ND		mg/kg	0.25	0.065	4
Toluene	ND		mg/kg	0.25	0.14	4
1,2-Dibromoethane	ND		mg/kg	0.12	0.074	4
Ethylbenzene	ND		mg/kg	0.25	0.036	4
p/m-Xylene	ND		mg/kg	0.50	0.14	4
o-Xylene	ND		mg/kg	0.25	0.073	4
Xylenes, Total	ND		mg/kg	0.25	0.073	4
Isopropylbenzene	1.3		mg/kg	0.25	0.027	4
1,3,5-Trimethylbenzene	ND		mg/kg	0.50	0.049	4
1,2,4-Trimethylbenzene	ND		mg/kg	0.50	0.084	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	130		70-130
4-Bromofluorobenzene	150	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-15 D
 Client ID: PB-847-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 19:09
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.46	0.047	4
Benzene	0.063	J	mg/kg	0.12	0.038	4
1,2-Dichloroethane	ND		mg/kg	0.23	0.060	4
Toluene	ND		mg/kg	0.23	0.12	4
1,2-Dibromoethane	ND		mg/kg	0.12	0.068	4
Ethylbenzene	0.24		mg/kg	0.23	0.033	4
p/m-Xylene	0.18	J	mg/kg	0.46	0.13	4
o-Xylene	0.090	J	mg/kg	0.23	0.067	4
Xylenes, Total	0.27	J	mg/kg	0.23	0.067	4
Isopropylbenzene	1.2		mg/kg	0.23	0.025	4
1,3,5-Trimethylbenzene	1.8		mg/kg	0.46	0.045	4
1,2,4-Trimethylbenzene	2.8		mg/kg	0.46	0.077	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	159	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-16
 Client ID: PB-847-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 20:34
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-17
 Client ID: PB-847-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 21:03
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.0042		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	0.00073	J	mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	0.018		mg/kg	0.0011	0.00015	1
p/m-Xylene	0.015		mg/kg	0.0021	0.00059	1
o-Xylene	0.0017		mg/kg	0.0011	0.00031	1
Xylenes, Total	0.017		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.027		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0088		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.11		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	125		70-130
4-Bromofluorobenzene	202	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-18
 Client ID: FB-070822-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:12
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-18
 Client ID: FB-070822-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 20:54
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	125		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-19
 Client ID: FB-070822-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:05
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:19
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-19
 Client ID: FB-070822-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:05
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 20:28
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	126		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-20
 Client ID: DUP-37
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 21:31
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/13/22 14:45
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 18-19 Batch: WG1662273-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/13/22 12:48
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-11,16-17,20 Batch: WG1662895-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 07/13/22 12:48
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 14-15 Batch: WG1662896-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/14/22 18:32
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 12 Batch: WG1663237-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/14/22 18:32
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13 Batch: WG1663238-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/13/22 17:26
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 18-19 Batch: WG1663309-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	119		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236582

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 18-19 Batch: WG1662273-2									
1,2-Dibromoethane	110		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236582

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-11,16-17,20 Batch: WG1662895-3 WG1662895-4								
Methyl tert butyl ether	120		122		66-130	2		30
Benzene	111		111		70-130	0		30
1,2-Dichloroethane	102		102		70-130	0		30
Toluene	112		113		70-130	1		30
1,2-Dibromoethane	111		114		70-130	3		30
Ethylbenzene	111		111		70-130	0		30
p/m-Xylene	111		112		70-130	1		30
o-Xylene	109		111		70-130	2		30
Isopropylbenzene	115		117		70-130	2		30
1,3,5-Trimethylbenzene	112		111		70-130	1		30
1,2,4-Trimethylbenzene	111		112		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	107		108		70-130
Dibromofluoromethane	90		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 14-15 Batch: WG1662896-3 WG1662896-4								
Methyl tert butyl ether	120		122		66-130	2		30
Benzene	111		111		70-130	0		30
1,2-Dichloroethane	102		102		70-130	0		30
Toluene	112		113		70-130	1		30
1,2-Dibromoethane	111		114		70-130	3		30
Ethylbenzene	111		111		70-130	0		30
p/m-Xylene	111		112		70-130	1		30
o-Xylene	109		111		70-130	2		30
Isopropylbenzene	115		117		70-130	2		30
1,3,5-Trimethylbenzene	112		111		70-130	1		30
1,2,4-Trimethylbenzene	111		112		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	107		108		70-130
Dibromofluoromethane	90		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 12 Batch: WG1663237-3 WG1663237-4								
Methyl tert butyl ether	104		101		66-130	3		30
Benzene	99		96		70-130	3		30
1,2-Dichloroethane	101		98		70-130	3		30
Toluene	90		87		70-130	3		30
1,2-Dibromoethane	97		96		70-130	1		30
Ethylbenzene	97		94		70-130	3		30
p/m-Xylene	96		94		70-130	2		30
o-Xylene	98		96		70-130	2		30
Isopropylbenzene	99		96		70-130	3		30
1,3,5-Trimethylbenzene	98		95		70-130	3		30
1,2,4-Trimethylbenzene	97		93		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	97		99		70-130
4-Bromofluorobenzene	99		97		70-130
Dibromofluoromethane	100		104		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236582

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13 Batch: WG1663238-3 WG1663238-4									
Methyl tert butyl ether	104		101		66-130	3		30	
Benzene	99		96		70-130	3		30	
1,2-Dichloroethane	101		98		70-130	3		30	
Toluene	90		87		70-130	3		30	
1,2-Dibromoethane	97		96		70-130	1		30	
Ethylbenzene	97		94		70-130	3		30	
p/m-Xylene	96		94		70-130	2		30	
o-Xylene	98		96		70-130	2		30	
Isopropylbenzene	99		96		70-130	3		30	
1,3,5-Trimethylbenzene	98		95		70-130	3		30	
1,2,4-Trimethylbenzene	97		93		70-130	4		30	

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	97		99		70-130
4-Bromofluorobenzene	99		97		70-130
Dibromofluoromethane	100		104		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 18-19 Batch: WG1663309-3 WG1663309-4								
Methyl tert butyl ether	95		97		63-130	2		20
Benzene	98		100		70-130	2		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	95		96		70-130	1		20
Ethylbenzene	94		96		70-130	2		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		92		70-130	4		20
1,3,5-Trimethylbenzene	91		95		64-130	4		20
1,2,4-Trimethylbenzene	90		94		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		105		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	102		94		70-130
Dibromofluoromethane	102		104		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-01
 Client ID: PB-847-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 13:00
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	65		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-02
 Client ID: PB-847-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 13:24
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	133	Q	23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-03
 Client ID: PB-847-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 13:47
 Analyst: JG
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	66		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-04
 Client ID: PB-847-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 14:11
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	141	Q	23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	73		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-05
 Client ID: PB-847-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 14:58
 Analyst: JG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	50		30-120
4-Terphenyl-d14	54		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-06
 Client ID: PB-847-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 15:21
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-07
 Client ID: PB-847-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 15:45
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-08
 Client ID: PB-847-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 16:08
 Analyst: JG
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-09
 Client ID: PB-847-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 16:32
 Analyst: JG
 Percent Solids: 77%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	134	Q	23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	71		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-10
 Client ID: PB-847-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 16:55
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-11
 Client ID: PB-847-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 17:19
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	163	Q	23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-12
 Client ID: PB-847-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 17:42
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	64		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-13
 Client ID: PB-847-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 18:06
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.13	J	mg/kg	0.19	0.023	1
Fluorene	0.12	J	mg/kg	0.19	0.019	1
Phenanthrene	0.29		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	130	Q	23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-14
 Client ID: PB-847-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 18:29
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.043	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	55		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-15 D
 Client ID: PB-847-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 10:21
 Analyst: JG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	7.0		mg/kg	1.9	0.23	10
Fluorene	5.3		mg/kg	1.9	0.18	10
Phenanthrene	12.		mg/kg	1.1	0.23	10
Anthracene	1.7		mg/kg	1.1	0.36	10
Pyrene	0.50	J	mg/kg	1.1	0.19	10
Benzo(a)anthracene	ND		mg/kg	1.1	0.21	10
Chrysene	ND		mg/kg	1.1	0.20	10
Benzo(b)fluoranthene	ND		mg/kg	1.1	0.32	10
Benzo(a)pyrene	ND		mg/kg	1.5	0.46	10
Benzo(ghi)perylene	ND		mg/kg	1.5	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	166	Q	23-120
2-Fluorobiphenyl	95		30-120
4-Terphenyl-d14	96		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-16
 Client ID: PB-847-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 19:16
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	58		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-17
 Client ID: PB-847-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 19:40
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-18
 Client ID: FB-070822-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/10/22 16:03
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	38		15-120
4-Terphenyl-d14	40	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-19
 Client ID: FB-070822-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:05
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/10/22 16:19
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	0.02	J	ug/l	0.10	0.01	1
Phenanthrene	0.04	J	ug/l	0.05	0.02	1
Anthracene	0.01	J	ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	37		23-120
2-Fluorobiphenyl	38		15-120
4-Terphenyl-d14	40	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-20
 Client ID: DUP-37
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 20:03
 Analyst: JG
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	121	Q	23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	66		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/10/22 15:47
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 18-19 Batch: WG1660895-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	35		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	32	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D
 Analytical Date: 07/11/22 11:50
 Analyst: JG

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-17,20 Batch: WG1660990-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	58		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 18-19 Batch: WG1660895-2 WG1660895-3								
Naphthalene	50		50		40-140	0		40
Fluorene	48		46		40-140	4		40
Phenanthrene	46		44		40-140	4		40
Anthracene	47		45		40-140	4		40
Pyrene	54		50		26-127	8		40
Benzo(a)anthracene	43		40		40-140	7		40
Chrysene	46		45		40-140	2		40
Benzo(b)fluoranthene	48		45		40-140	6		40
Benzo(a)pyrene	45		41		40-140	9		40
Benzo(ghi)perylene	50		47		40-140	6		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	27		26		23-120
2-Fluorobiphenyl	25		24		15-120
4-Terphenyl-d14	27	Q	25	Q	41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-17,20 Batch: WG1660990-2 WG1660990-3								
Naphthalene	57		63		40-140	10		50
Fluorene	64		68		40-140	6		50
Phenanthrene	60		65		40-140	8		50
Anthracene	62		67		40-140	8		50
Pyrene	60		65		35-142	8		50
Benzo(a)anthracene	67		71		40-140	6		50
Chrysene	64		70		40-140	9		50
Benzo(b)fluoranthene	66		76		40-140	14		50
Benzo(a)pyrene	74		75		40-140	1		50
Benzo(ghi)perylene	54		67		40-140	21		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	107		126	Q	23-120
2-Fluorobiphenyl	54		58		30-120
4-Terphenyl-d14	59		65		18-120

METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-01
 Client ID: PB-847-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.08		mg/kg	2.37	0.127	1	07/12/22 12:15	07/15/22 07:18	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-02
 Client ID: PB-847-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.67		mg/kg	2.42	0.130	1	07/12/22 12:15	07/15/22 07:23	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-03
 Client ID: PB-847-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.07		mg/kg	2.17	0.116	1	07/12/22 12:15	07/15/22 07:28	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-04
 Client ID: PB-847-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.69		mg/kg	2.26	0.121	1	07/12/22 12:15	07/15/22 08:04	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-05
 Client ID: PB-847-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.51		mg/kg	2.23	0.119	1	07/12/22 12:15	07/15/22 08:09	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-06
 Client ID: PB-847-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.69		mg/kg	2.31	0.124	1	07/12/22 12:15	07/15/22 08:13	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-07
 Client ID: PB-847-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.30		mg/kg	4.63	0.248	2	07/12/22 12:15	07/15/22 15:40	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-08
 Client ID: PB-847-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.46		mg/kg	2.36	0.126	1	07/12/22 12:15	07/15/22 08:23	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-09
 Client ID: PB-847-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.13		mg/kg	2.50	0.134	1	07/12/22 12:15	07/15/22 08:28	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-10
 Client ID: PB-847-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.37		mg/kg	4.80	0.257	2	07/12/22 12:15	07/15/22 15:45	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-11
 Client ID: PB-847-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.97		mg/kg	4.44	0.238	2	07/12/22 12:15	07/15/22 09:39	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-12
 Client ID: PB-847-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.35		mg/kg	4.54	0.244	2	07/12/22 12:15	07/15/22 09:44	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-13
 Client ID: PB-847-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.88		mg/kg	2.30	0.123	1	07/12/22 12:15	07/15/22 08:47	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-14
 Client ID: PB-847-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.24		mg/kg	4.85	0.260	2	07/12/22 12:15	07/15/22 10:32	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-15
 Client ID: PB-847-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.06		mg/kg	4.52	0.242	2	07/12/22 12:15	07/15/22 10:37	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-16
 Client ID: PB-847-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.17		mg/kg	2.40	0.128	1	07/12/22 12:15	07/15/22 09:58	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-17
 Client ID: PB-847-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.26		mg/kg	4.70	0.252	2	07/12/22 12:15	07/15/22 10:42	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-18
 Client ID: FB-070822-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 09:51	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-19
 Client ID: FB-070822-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:05
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 10:06	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-20
 Client ID: DUP-37
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.52		mg/kg	2.34	0.125	1	07/12/22 12:15	07/15/22 10:08	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 18-19 Batch: WG1660944-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 09:42	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-17,20 Batch: WG1661452-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/12/22 12:15	07/15/22 07:09	1,6010D	SB

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236582

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 Batch: WG1660944-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-17,20 Batch: WG1661452-2 SRM Lot Number: D113-540								
Lead, Total	80		-		72-128	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 QC Batch ID: WG1660944-3 QC Sample: L2236582-18 Client ID: FB-070822-1												
Lead, Total	ND	530	536.0	101		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-17,20 QC Batch ID: WG1661452-3 QC Sample: L2236658-01 Client ID: MS Sample												
Lead, Total	4.11	42.6	37.2	78		-	-		75-125	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 QC Batch ID: WG1660944-4 QC Sample: L2236582-18 Client ID: FB-070822-1						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-17,20 QC Batch ID: WG1661452-4 QC Sample: L2236658-01 Client ID: DUP Sample						
Lead, Total	4.11	3.93J	mg/kg	NC		20



INORGANICS & MISCELLANEOUS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-01
Client ID: PB-847-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:00
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-02
Client ID: PB-847-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:10
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-03
Client ID: PB-847-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:20
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.5		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-04
Client ID: PB-847-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:30
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-05
Client ID: PB-847-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:40
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-06
Client ID: PB-847-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-07
Client ID: PB-847-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.0		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-08
Client ID: PB-847-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.9		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-09
Client ID: PB-847-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.1		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-10
Client ID: PB-847-10-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-11
Client ID: PB-847-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-12
Client ID: PB-847-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:50
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-13
Client ID: PB-847-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:00
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-14
Client ID: PB-847-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:10
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.9		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-15
Client ID: PB-847-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.1		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-16
Client ID: PB-847-16-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-17
Client ID: PB-847-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-20
Client ID: DUP-37
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.3		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-17,20 QC Batch ID: WG1661509-1 QC Sample: L2236582-01 Client ID: PB-847-01-SS01						
Solids, Total	81.4	81.7	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236582**Project Number:** 200.00135.006**Report Date:** 07/15/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-01A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-01B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-01C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-01D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-01F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-02A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-02B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-02C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-02D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-02F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-03A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-03B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-03C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-03D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-03F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-04A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-04B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-04C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-04D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236582**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-04F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-05A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-05B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-05C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-05D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-05F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-06A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-06B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-06C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-06D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-06F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-07A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-07B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-07C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-07D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-07F	Glass 250ml/8oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-08A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-08B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-08C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-08D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-08F	Glass 250ml/8oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-09A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-09B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236582**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-09C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-09D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-09F	Glass 250ml/8oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-10A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-10B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-10C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-10D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-10F	Glass 250ml/8oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-11A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-11B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-11C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-11D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-11F	Glass 250ml/8oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-12A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-12B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-12C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-12D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-12F	Glass 250ml/8oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-13A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-13B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-13C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-13D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-13E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-13F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236582**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-14A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-14B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-14C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-14D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-14F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-15A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-15B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-15C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-15D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-15F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-16A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-16B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-16C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-16D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-16E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-16F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-17A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-17B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-17C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-17D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-17E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-17F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-18A	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-18B	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-18C	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-18D	Plastic 250ml HNO3 preserved	A	<2	<2	2.6	Y	Absent		PB-6020T-PPB(180)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Serial_No:07152217:51
Lab Number: L2236582
Report Date: 07/15/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-18E	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236582-18F	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236582-19A	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-19B	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-19C	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-19D	Plastic 250ml HNO3 preserved	A	<2	<2	2.6	Y	Absent		PB-6020T-PPB(180)
L2236582-19E	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236582-19F	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236582-20A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-20B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-20C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-20D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-20E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-20F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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Project Name: PHILADELPHIA REFINERY
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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

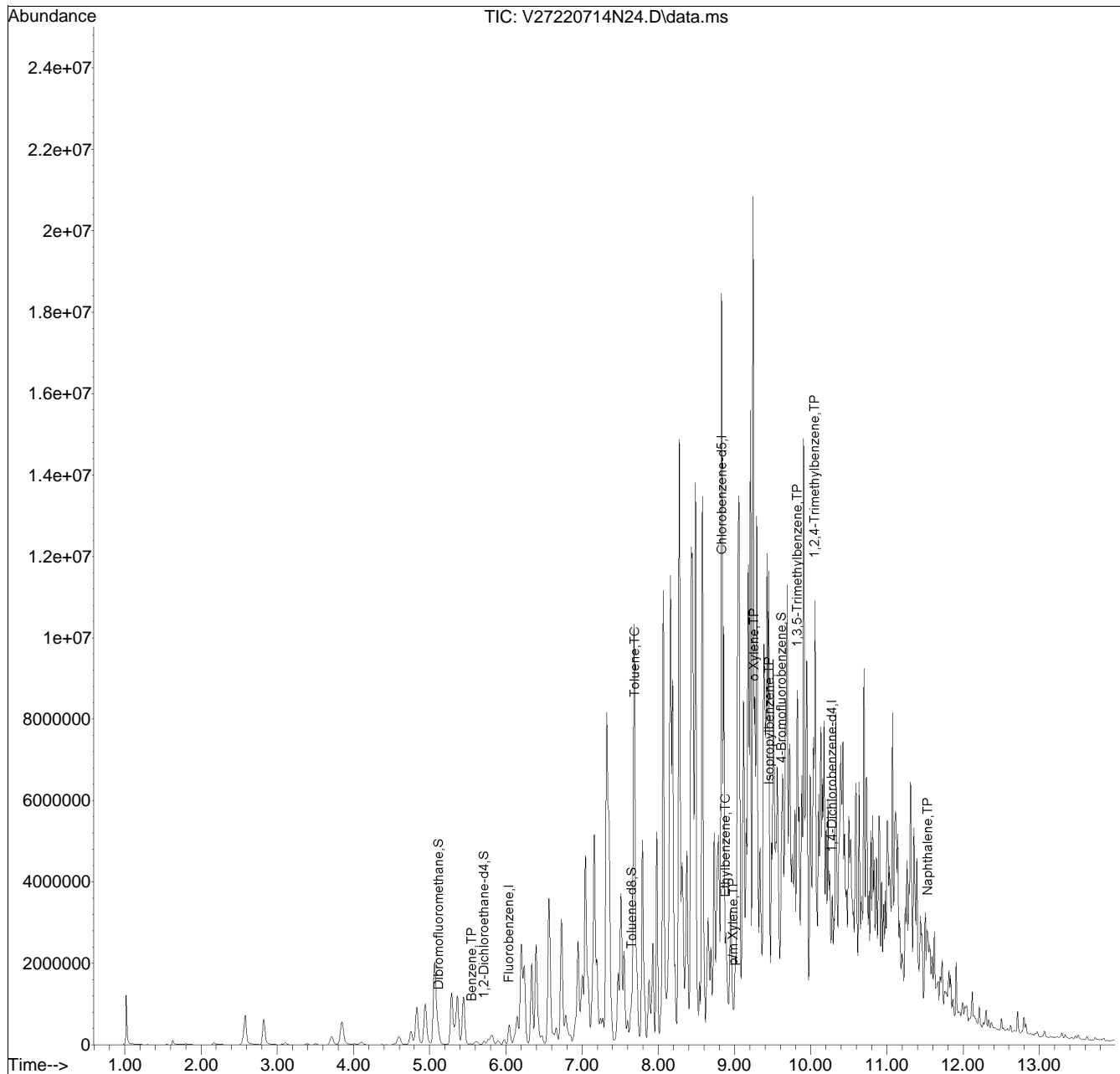
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

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 Data File : V27220714N24.D
 Acq On : 15 Jul 2022 12:46 am
 Operator : VOA127:MKS
 Sample : 12236582-12,31,6.79,5,,b,r2f
 Misc : WG1663237,ICAL19153
 ALS Vial : 24 Sample Multiplier: 1

Quant Time: Jul 15 07:31:13 2022
 Quant Method : I:\VOLATILES\VOA127\2022\220714N\V127_220706A_8260.m
 Quant Title : VOLATILES BY GC/MS
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 Response via : Initial Calibration

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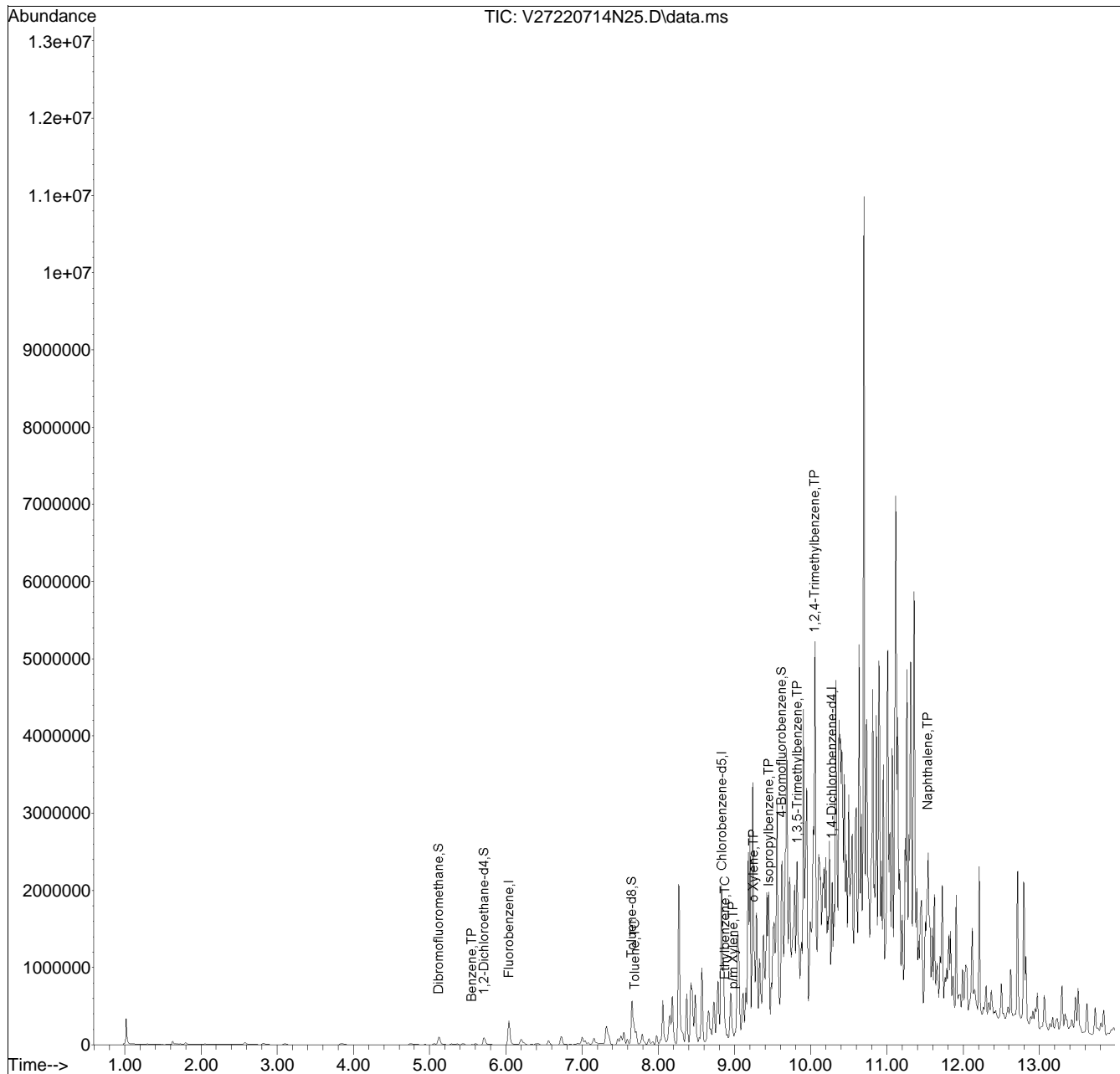


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 Operator : VOA127:MKS
 Sample : 12236582-13d,31h,6.60,5,0.025,,a,r2f
 Misc : WG1663238,ICAL19153
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Jul 15 06:42:38 2022
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 Response via : Initial Calibration

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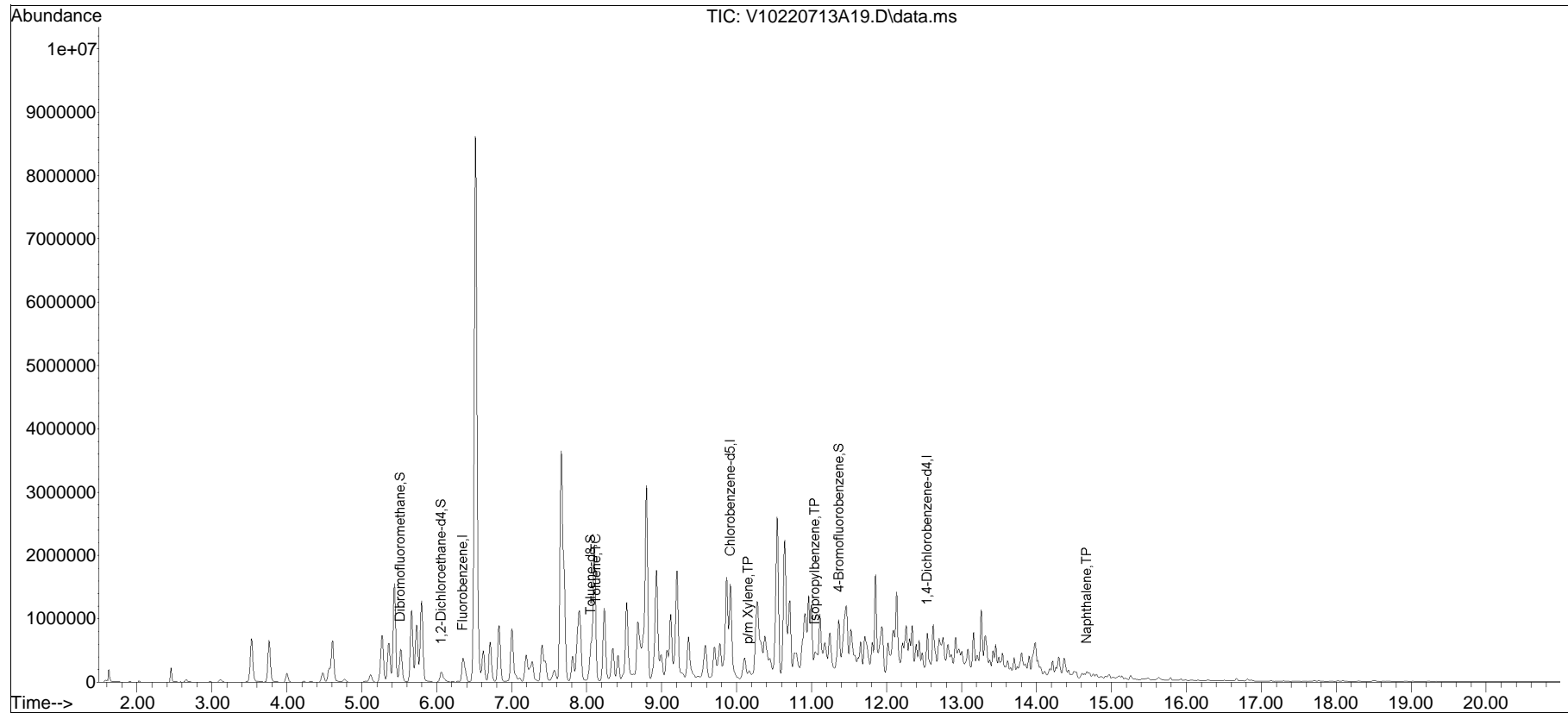


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Operator : VOA110:JC
Sample : 12236582-14D,31h,6.04,5,0.025,,a,r2f
Misc : WG1662896,ICAL18890
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Jul 14 09:25:20 2022
Quant Method : I:\VOLATILES\VOA110\2022\220713A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V10220713A01.D•

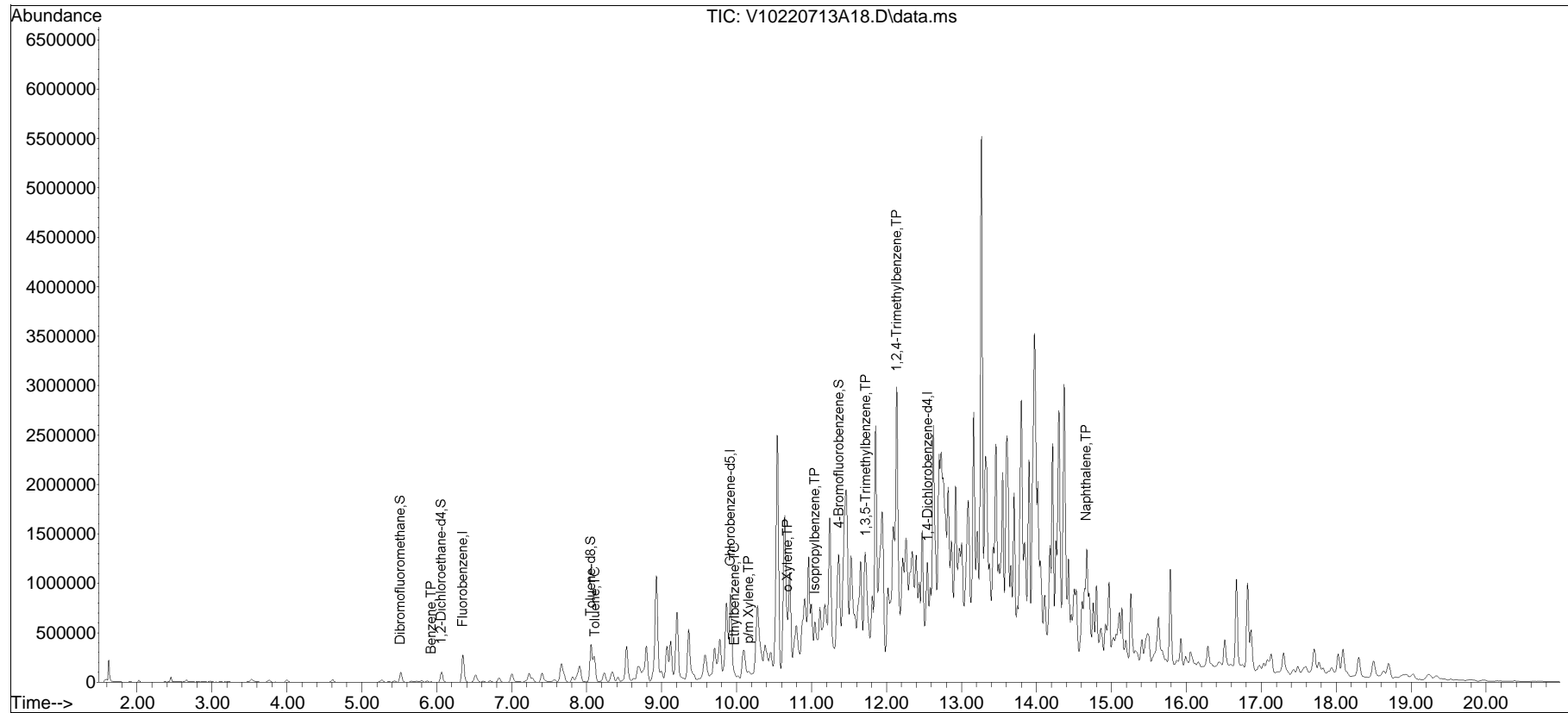


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220713A\
Data File : V10220713A18.D
Acq On : 13 Jul 2022 7:09 pm
Operator : VOA110:JC
Sample : 12236582-15D,31h,5.82,5,0.025,,a,r2f
Misc : WG1662896,ICAL18890
ALS Vial : 18 Sample Multiplier: 1

Quant Time: Jul 14 09:18:49 2022
Quant Method : I:\VOLATILES\VOA110\2022\220713A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V10220713A01.D•

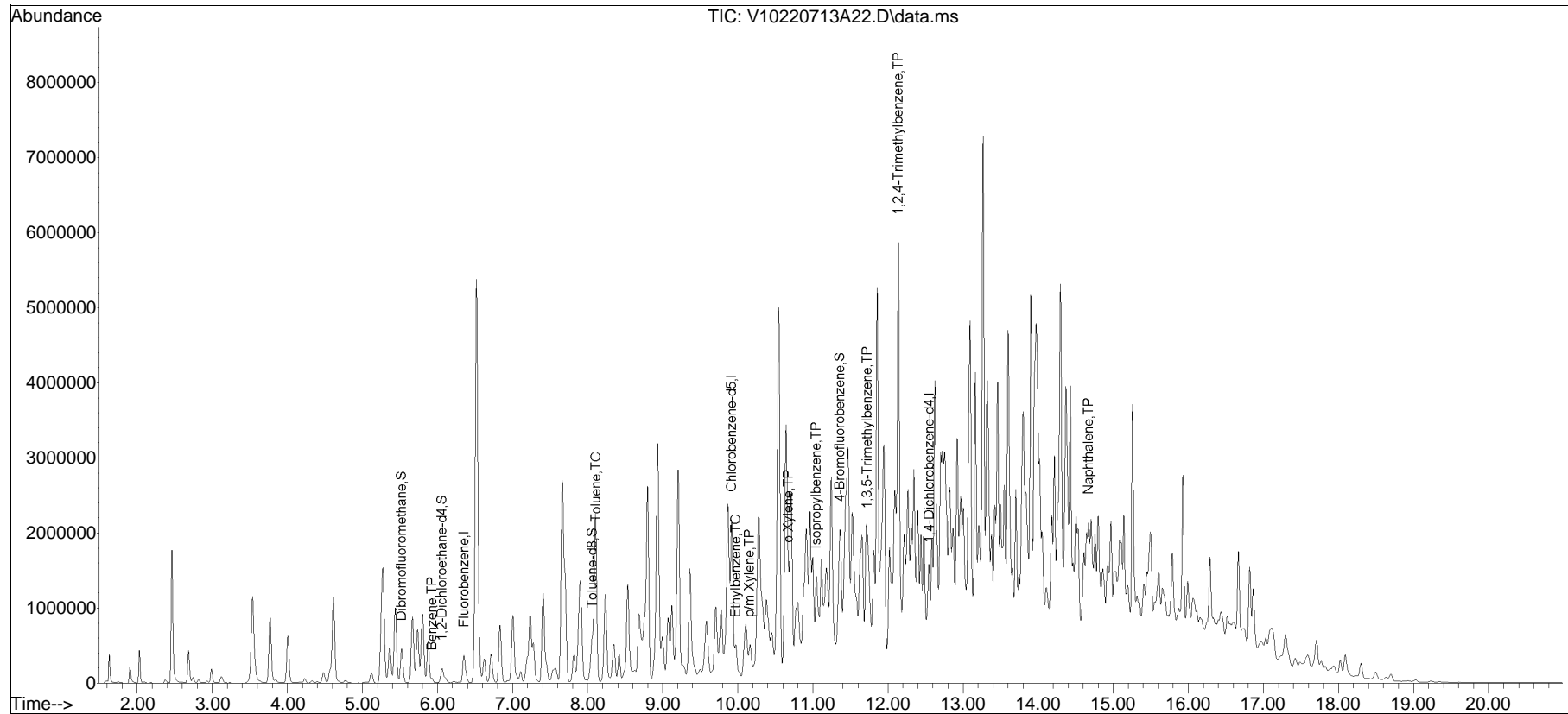


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220713A\
Data File : V10220713A22.D
Acq On : 13 Jul 2022 9:03 pm
Operator : VOA110:JC
Sample : 12236582-17,31,5.72,5,,b,r2f
Misc : WG1662895,ICAL18890
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Jul 14 09:25:56 2022
Quant Method : I:\VOLATILES\VOA110\2022\220713A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V10220713A01.D•





ANALYTICAL REPORT

Lab Number:	L2236590
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/15/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236590

Report Date: 07/15/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236590-01	PB-840-01-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:45	07/08/22
L2236590-02	PB-840-02-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:50	07/08/22
L2236590-03	PB-840-03-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:00	07/08/22
L2236590-04	PB-840-04-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:10	07/08/22
L2236590-05	PB-840-05-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:20	07/08/22
L2236590-06	PB-840-06-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:30	07/08/22
L2236590-07	PB-840-07-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:40	07/08/22
L2236590-08	PB-840-08-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:20	07/08/22
L2236590-09	PB-840-09-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:30	07/08/22
L2236590-10	PB-840-10-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:40	07/08/22
L2236590-11	PB-840-11-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:00	07/08/22
L2236590-12	PB-840-12-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:10	07/08/22
L2236590-13	PB-840-13-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:20	07/08/22
L2236590-14	PB-840-14-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:30	07/08/22
L2236590-15	PB-840-15-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:40	07/08/22
L2236590-16	PB-840-16-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:50	07/08/22
L2236590-17	DUP-38	SOIL	PHILADELPHIA, PA	07/08/22 00:00	07/08/22
L2236590-18	FB-070822-3	WATER	PHILADELPHIA, PA	07/08/22 13:00	07/08/22
L2236590-19	FB-070822-4	WATER	PHILADELPHIA, PA	07/08/22 13:10	07/08/22
L2236590-20	TB-070822	WATER	PHILADELPHIA, PA	07/08/22 00:00	07/08/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2236590-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (141%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236590-15: The surrogate recovery is outside the acceptance criteria for 1,2-dichloroethane-d4 (67%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Total Metals

The WG1661456-4 Laboratory Duplicate RPD for lead (50%), performed on L2236590-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/15/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-01
 Client ID: PB-840-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:45
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 22:51
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	0.0060		mg/kg	0.00080	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	0.0026		mg/kg	0.0016	0.00087	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	0.00068	J	mg/kg	0.0016	0.00023	1
p/m-Xylene	0.0070		mg/kg	0.0032	0.00090	1
o-Xylene	0.0010	J	mg/kg	0.0016	0.00047	1
Xylenes, Total	0.0080	J	mg/kg	0.0016	0.00047	1
Isopropylbenzene	0.0092		mg/kg	0.0016	0.00018	1
1,3,5-Trimethylbenzene	0.0023	J	mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0032	0.00054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	141	Q	70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-02
 Client ID: PB-840-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 02:06
 Analyst: JC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00021	J	mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	0.00019	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	0.0020		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0020		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00034	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0059		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.0035		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-03
 Client ID: PB-840-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 22:38
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.00028	J	mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	0.00015	J	mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	0.00062	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-04
 Client ID: PB-840-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 23:01
 Analyst: JC
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-05
 Client ID: PB-840-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:14
 Analyst: MKS
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00079	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00081	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	0.00047	J	mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-06
 Client ID: PB-840-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:37
 Analyst: MKS
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00058	J	mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	0.0016		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-07
 Client ID: PB-840-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 23:24
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00023	1
Benzene	0.023		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.00079	J	mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	0.016		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.043		mg/kg	0.0022	0.00063	1
o-Xylene	0.0011		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.044		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0020		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0056		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	0.019		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-08
 Client ID: PB-840-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 23:47
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	0.00069		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.00015	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	80		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09 D2
 Client ID: PB-840-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 01:09
 Analyst: MKS
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
1,2,4-Trimethylbenzene	92.		mg/kg	1.2	0.20	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	84		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09 D
 Client ID: PB-840-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 04:46
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.61	0.061	5
Benzene	4.4		mg/kg	0.15	0.050	5
1,2-Dichloroethane	ND		mg/kg	0.30	0.078	5
Toluene	0.30		mg/kg	0.30	0.16	5
1,2-Dibromoethane	ND		mg/kg	0.15	0.089	5
Ethylbenzene	66.		mg/kg	0.30	0.043	5
p/m-Xylene	160		mg/kg	0.61	0.17	5
o-Xylene	37.		mg/kg	0.30	0.089	5
Xylenes, Total	200		mg/kg	0.30	0.089	5
Isopropylbenzene	15.		mg/kg	0.30	0.033	5
1,3,5-Trimethylbenzene	33.		mg/kg	0.61	0.059	5
1,2,4-Trimethylbenzene	92.	E	mg/kg	0.61	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-10
 Client ID: PB-840-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 00:10
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.022		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	0.022		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0038		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	0.012		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-11
 Client ID: PB-840-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:59
 Analyst: MKS
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	0.0084		mg/kg	0.00039	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00078	0.00020	1
Toluene	ND		mg/kg	0.00078	0.00042	1
1,2-Dibromoethane	ND		mg/kg	0.00039	0.00023	1
Ethylbenzene	0.0097		mg/kg	0.00078	0.00011	1
p/m-Xylene	0.054		mg/kg	0.0016	0.00044	1
o-Xylene	0.0049		mg/kg	0.00078	0.00023	1
Xylenes, Total	0.059		mg/kg	0.00078	0.00023	1
Isopropylbenzene	0.0058		mg/kg	0.00078	0.00008	1
1,3,5-Trimethylbenzene	0.040		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	0.072		mg/kg	0.0016	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	124		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-12
 Client ID: PB-840-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 00:33
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-13
 Client ID: PB-840-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 00:57
 Analyst: JC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-14
 Client ID: PB-840-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 01:20
 Analyst: JC
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-15
 Client ID: PB-840-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:22
 Analyst: MKS
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	67	Q	70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	84		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-16
 Client ID: PB-840-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:45
 Analyst: MKS
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-17
 Client ID: DUP-38
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 01:43
 Analyst: JC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00030	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-18
 Client ID: FB-070822-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:26
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-18
 Client ID: FB-070822-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 20:02
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	126		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-19
 Client ID: FB-070822-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:33
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-19
 Client ID: FB-070822-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 19:36
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	127		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-20
 Client ID: TB-070822
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:39
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-20
 Client ID: TB-070822
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 19:10
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/13/22 14:45
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 18-20 Batch: WG1662273-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/13/22 21:06
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02-04,07-08,10,12-14,17 Batch: WG1662979-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/13/22 21:06
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1662980-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/14/22 20:32
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,05-06,11,15-16 Batch: WG1663272-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/14/22 20:32
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1663273-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/13/22 17:26
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 18-20 Batch: WG1663309-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	119		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 18-20 Batch: WG1662273-2									
1,2-Dibromoethane	110		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02-04,07-08,10,12-14,17 Batch: WG1662979-3 WG1662979-4								
Methyl tert butyl ether	90		90		66-130	0		30
Benzene	83		82		70-130	1		30
1,2-Dichloroethane	66	Q	66	Q	70-130	0		30
Toluene	81		78		70-130	4		30
1,2-Dibromoethane	90		89		70-130	1		30
Ethylbenzene	80		77		70-130	4		30
p/m-Xylene	85		81		70-130	5		30
o-Xylene	86		82		70-130	5		30
Isopropylbenzene	81		77		70-130	5		30
1,3,5-Trimethylbenzene	82		77		70-130	6		30
1,2,4-Trimethylbenzene	83		78		70-130	6		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	77		77		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1662980-3 WG1662980-4								
Methyl tert butyl ether	90		90		66-130	0		30
Benzene	83		82		70-130	1		30
1,2-Dichloroethane	66	Q	66	Q	70-130	0		30
Toluene	81		78		70-130	4		30
1,2-Dibromoethane	90		89		70-130	1		30
Ethylbenzene	80		77		70-130	4		30
p/m-Xylene	85		81		70-130	5		30
o-Xylene	86		82		70-130	5		30
Isopropylbenzene	81		77		70-130	5		30
1,3,5-Trimethylbenzene	82		77		70-130	6		30
1,2,4-Trimethylbenzene	83		78		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	77		77		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,05-06,11,15-16 Batch: WG1663272-3 WG1663272-4								
Methyl tert butyl ether	102		95		66-130	7		30
Benzene	95		94		70-130	1		30
1,2-Dichloroethane	71		71		70-130	0		30
Toluene	93		92		70-130	1		30
1,2-Dibromoethane	97		96		70-130	1		30
Ethylbenzene	92		91		70-130	1		30
p/m-Xylene	97		96		70-130	1		30
o-Xylene	97		94		70-130	3		30
Isopropylbenzene	97		97		70-130	0		30
1,3,5-Trimethylbenzene	94		95		70-130	1		30
1,2,4-Trimethylbenzene	95		94		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	77		76		70-130
Toluene-d8	96		97		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	95		91		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery		RPD	RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	Qual		Limits	
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1663273-3 WG1663273-4									
Methyl tert butyl ether	102		95		66-130		7		30
Benzene	95		94		70-130		1		30
1,2-Dichloroethane	71		71		70-130		0		30
Toluene	93		92		70-130		1		30
1,2-Dibromoethane	97		96		70-130		1		30
Ethylbenzene	92		91		70-130		1		30
p/m-Xylene	97		96		70-130		1		30
o-Xylene	97		94		70-130		3		30
Isopropylbenzene	97		97		70-130		0		30
1,3,5-Trimethylbenzene	94		95		70-130		1		30
1,2,4-Trimethylbenzene	95		94		70-130		1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	77		76		70-130
Toluene-d8	96		97		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	95		91		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 18-20 Batch: WG1663309-3 WG1663309-4								
Methyl tert butyl ether	95		97		63-130	2		20
Benzene	98		100		70-130	2		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	95		96		70-130	1		20
Ethylbenzene	94		96		70-130	2		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		92		70-130	4		20
1,3,5-Trimethylbenzene	91		95		64-130	4		20
1,2,4-Trimethylbenzene	90		94		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		105		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	102		94		70-130
Dibromofluoromethane	102		104		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-01
 Client ID: PB-840-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:45
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 08:06
 Analyst: SLR
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.046	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.19		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.21		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.15		mg/kg	0.12	0.022	1
Chrysene	0.22		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.18		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.15	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-02
 Client ID: PB-840-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 05:46
 Analyst: SLR
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	72		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-03
 Client ID: PB-840-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 04:35
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-04
 Client ID: PB-840-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 03:25
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	139	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-05
 Client ID: PB-840-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 10:27
 Analyst: SLR
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.075	J	mg/kg	0.18	0.022	1
Fluorene	0.023	J	mg/kg	0.18	0.017	1
Phenanthrene	0.073	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.056	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.030	J	mg/kg	0.11	0.020	1
Chrysene	0.056	J	mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.053	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.025	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	126	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	76		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-06
 Client ID: PB-840-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 09:16
 Analyst: SLR
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.049	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.018	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	130	Q	23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-07
 Client ID: PB-840-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 06:56
 Analyst: SLR
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	145	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-08
 Client ID: PB-840-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 06:32
 Analyst: SLR
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	76		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09
 Client ID: PB-840-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 10:50
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	10.	E	mg/kg	0.19	0.023	1
Fluorene	1.9		mg/kg	0.19	0.019	1
Phenanthrene	4.8		mg/kg	0.12	0.023	1
Anthracene	0.16		mg/kg	0.12	0.037	1
Pyrene	0.48		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.97		mg/kg	0.12	0.022	1
Chrysene	0.22		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.096	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.072	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	235	Q	23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09 D
 Client ID: PB-840-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 16:11
 Analyst: JG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	9.3		mg/kg	1.9	0.23	10

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-10
 Client ID: PB-840-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 06:09
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	144	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-11
 Client ID: PB-840-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 09:40
 Analyst: SLR
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.090	J	mg/kg	0.20	0.024	1
Fluorene	0.072	J	mg/kg	0.20	0.019	1
Phenanthrene	0.18		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.031	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	0.041	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	124	Q	23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	72		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-12
 Client ID: PB-840-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 07:19
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	141	Q	23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	81		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-13
 Client ID: PB-840-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 07:42
 Analyst: SLR
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 20:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	77		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-14
 Client ID: PB-840-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 10:03
 Analyst: SLR
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 20:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.17		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.28		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.18		mg/kg	0.11	0.020	1
Chrysene	0.17		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.22		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.18		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.099	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	67		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-15
 Client ID: PB-840-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 07:42
 Analyst: CMM
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 20:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.091	J	mg/kg	0.18	0.022	1
Fluorene	0.050	J	mg/kg	0.18	0.017	1
Phenanthrene	0.41		mg/kg	0.11	0.022	1
Anthracene	0.11		mg/kg	0.11	0.035	1
Pyrene	0.68		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.48		mg/kg	0.11	0.020	1
Chrysene	0.44		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.57		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.46		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.22		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	79		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-16
 Client ID: PB-840-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 20:27
 Analyst: JG
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.14		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.18		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.12		mg/kg	0.11	0.021	1
Chrysene	0.13		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.18		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.14	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.098	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-17
 Client ID: DUP-38
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 20:50
 Analyst: JG
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.045	J	mg/kg	0.19	0.023	1
Fluorene	0.052	J	mg/kg	0.19	0.018	1
Phenanthrene	0.39		mg/kg	0.11	0.023	1
Anthracene	0.092	J	mg/kg	0.11	0.036	1
Pyrene	0.53		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.44		mg/kg	0.11	0.021	1
Chrysene	0.43		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.52		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.40		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.18		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	133	Q	23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-18
 Client ID: FB-070822-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/10/22 16:35
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	35	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-19
 Client ID: FB-070822-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/10/22 16:51
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	38	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/10/22 15:47
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 18-19 Batch: WG1660895-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	35		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	32	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D
 Analytical Date: 07/11/22 11:50
 Analyst: JG

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 16-17 Batch: WG1660990-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	58		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
 Analytical Date: 07/12/22 01:51
 Analyst: SLR

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-15 Batch: WG1661021-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	76		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 18-19 Batch: WG1660895-2 WG1660895-3								
Naphthalene	50		50		40-140	0		40
Fluorene	48		46		40-140	4		40
Phenanthrene	46		44		40-140	4		40
Anthracene	47		45		40-140	4		40
Pyrene	54		50		26-127	8		40
Benzo(a)anthracene	43		40		40-140	7		40
Chrysene	46		45		40-140	2		40
Benzo(b)fluoranthene	48		45		40-140	6		40
Benzo(a)pyrene	45		41		40-140	9		40
Benzo(ghi)perylene	50		47		40-140	6		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	27		26		23-120
2-Fluorobiphenyl	25		24		15-120
4-Terphenyl-d14	27	Q	25	Q	41-149

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 16-17 Batch: WG1660990-2 WG1660990-3								
Naphthalene	57		63		40-140	10		50
Fluorene	64		68		40-140	6		50
Phenanthrene	60		65		40-140	8		50
Anthracene	62		67		40-140	8		50
Pyrene	60		65		35-142	8		50
Benzo(a)anthracene	67		71		40-140	6		50
Chrysene	64		70		40-140	9		50
Benzo(b)fluoranthene	66		76		40-140	14		50
Benzo(a)pyrene	74		75		40-140	1		50
Benzo(ghi)perylene	54		67		40-140	21		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	107		126	Q	23-120
2-Fluorobiphenyl	54		58		30-120
4-Terphenyl-d14	59		65		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-15 Batch: WG1661021-2 WG1661021-3								
Naphthalene	73		64		40-140	13		50
Fluorene	81		70		40-140	15		50
Phenanthrene	78		68		40-140	199	Q	50
Anthracene	79		69		40-140	14		50
Pyrene	79		68		35-142	15		50
Benzo(a)anthracene	85		74		40-140	14		50
Chrysene	84		72		40-140	15		50
Benzo(b)fluoranthene	93		81		40-140	14		50
Benzo(a)pyrene	91		78		40-140	15		50
Benzo(ghi)perylene	81		69		40-140	16		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	131	Q	113		23-120
2-Fluorobiphenyl	69		60		30-120
4-Terphenyl-d14	79		71		18-120



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-01

Date Collected: 07/08/22 09:45

Client ID: PB-840-01-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	19.2		mg/kg	4.58	0.246	2	07/12/22 12:36	07/15/22 10:51	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-02

Date Collected: 07/08/22 09:50

Client ID: PB-840-02-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.66		mg/kg	2.26	0.121	1	07/12/22 12:36	07/15/22 08:26	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-03

Date Collected: 07/08/22 10:00

Client ID: PB-840-03-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.92		mg/kg	2.29	0.123	1	07/12/22 12:36	07/15/22 08:31	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-04

Date Collected: 07/08/22 10:10

Client ID: PB-840-04-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	10.9		mg/kg	2.02	0.108	1	07/12/22 12:36	07/15/22 09:07	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-05

Date Collected: 07/08/22 10:20

Client ID: PB-840-05-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	103		mg/kg	2.12	0.113	1	07/12/22 12:36	07/15/22 09:12	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-06

Date Collected: 07/08/22 10:30

Client ID: PB-840-06-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.05		mg/kg	2.20	0.118	1	07/12/22 12:36	07/15/22 09:16	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-07

Date Collected: 07/08/22 10:40

Client ID: PB-840-07-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.94		mg/kg	2.26	0.121	1	07/12/22 12:36	07/15/22 09:21	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-08
 Client ID: PB-840-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.75		mg/kg	2.33	0.125	1	07/12/22 12:36	07/15/22 09:25	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09

Date Collected: 07/08/22 11:30

Client ID: PB-840-09-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.30		mg/kg	2.27	0.122	1	07/12/22 12:36	07/15/22 09:30	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-10
 Client ID: PB-840-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.38		mg/kg	2.25	0.120	1	07/12/22 12:36	07/15/22 09:35	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-11

Date Collected: 07/08/22 12:00

Client ID: PB-840-11-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.06		mg/kg	2.36	0.127	1	07/12/22 12:36	07/15/22 09:39	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-12

Date Collected: 07/08/22 12:10

Client ID: PB-840-12-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.21		mg/kg	2.26	0.121	1	07/12/22 12:36	07/15/22 09:44	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-13

Date Collected: 07/08/22 12:20

Client ID: PB-840-13-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.78		mg/kg	2.10	0.113	1	07/12/22 12:36	07/15/22 09:48	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-14

Date Collected: 07/08/22 12:30

Client ID: PB-840-14-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	44.4		mg/kg	2.09	0.112	1	07/12/22 12:36	07/15/22 10:28	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-15

Date Collected: 07/08/22 12:40

Client ID: PB-840-15-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	49.2		mg/kg	4.30	0.231	2	07/12/22 12:36	07/15/22 15:11	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-16

Date Collected: 07/08/22 12:50

Client ID: PB-840-16-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	53.1		mg/kg	2.22	0.119	1	07/12/22 12:36	07/15/22 10:37	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-17

Date Collected: 07/08/22 00:00

Client ID: DUP-38

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	36.7		mg/kg	2.20	0.118	1	07/12/22 12:36	07/15/22 10:42	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-18

Date Collected: 07/08/22 13:00

Client ID: FB-070822-3

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 10:41	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-19

Date Collected: 07/08/22 13:10

Client ID: FB-070822-4

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 10:46	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 18-19 Batch: WG1660944-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 09:42	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-17 Batch: WG1661456-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/12/22 12:36	07/15/22 08:17	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 Batch: WG1660944-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-17 Batch: WG1661456-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 QC Batch ID: WG1660944-3 QC Sample: L2236582-18 Client ID: MS Sample												
Lead, Total	ND	530	536.0	101		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG1661456-3 QC Sample: L2236590-01 Client ID: PB-840-01-SS01												
Lead, Total	19.2	48.2	57.6	80		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236590

Report Date: 07/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 QC Batch ID: WG1660944-4 QC Sample: L2236582-18 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG1661456-4 QC Sample: L2236590-01 Client ID: PB-840-01-SS01						
Lead, Total	19.2	32.1	mg/kg	50	Q	20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-01

Date Collected: 07/08/22 09:45

Client ID: PB-840-01-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.8		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-02

Date Collected: 07/08/22 09:50

Client ID: PB-840-02-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-03

Date Collected: 07/08/22 10:00

Client ID: PB-840-03-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-04

Date Collected: 07/08/22 10:10

Client ID: PB-840-04-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.3		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-05

Date Collected: 07/08/22 10:20

Client ID: PB-840-05-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.8		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-06

Date Collected: 07/08/22 10:30

Client ID: PB-840-06-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-07

Date Collected: 07/08/22 10:40

Client ID: PB-840-07-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-08

Date Collected: 07/08/22 11:20

Client ID: PB-840-08-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-09

Date Collected: 07/08/22 11:30

Client ID: PB-840-09-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-10

Date Collected: 07/08/22 11:40

Client ID: PB-840-10-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.3		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-11

Date Collected: 07/08/22 12:00

Client ID: PB-840-11-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-12

Date Collected: 07/08/22 12:10

Client ID: PB-840-12-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-13

Date Collected: 07/08/22 12:20

Client ID: PB-840-13-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.7		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-14

Date Collected: 07/08/22 12:30

Client ID: PB-840-14-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-15

Date Collected: 07/08/22 12:40

Client ID: PB-840-15-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-16

Date Collected: 07/08/22 12:50

Client ID: PB-840-16-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-17

Date Collected: 07/08/22 00:00

Client ID: DUP-38

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236590

Report Date: 07/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-17 QC Batch ID: WG1661481-1 QC Sample: L2236590-01 Client ID: PB-840-01-SS01						
Solids, Total	82.8	82.6	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-01A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-01B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-01C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-01D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-01F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-02A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-02B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-02C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-02D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-02F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-03A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-03B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-03C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-03D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-03F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-04A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-04B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-04C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-04D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-04F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-05A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-05B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-05C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-05D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-05F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-06A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-06B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-06C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-06D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-06F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-07A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-07B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-07C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-07D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-07F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-08A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-08B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-08C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-08D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-08F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-09A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-09B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-09C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-09D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-09F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-10A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-10B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-10C	Vial water preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-10D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-10F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-11A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-11B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-11C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-11D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-11F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-12A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-12B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-12C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-12D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-12F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-13A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-13B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-13C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-13D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-13E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-13F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-14A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-14B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-14C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-14D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-14E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-14F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-15A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-15B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-15C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-15D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-15E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-15F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-16A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-16B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-16C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-16D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-16E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-16F	Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-16G	Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-17A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-17B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 13:43	PA-8260HLW(14)
L2236590-17C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-17D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-17E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-17F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-18A	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-18B	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-18C	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Serial_No:07152217:23
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-18D	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		PB-6020T-PPB(180)
L2236590-18E	Amber 250ml unpreserved	A	7	7	2.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236590-18F	Amber 250ml unpreserved	A	7	7	2.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236590-19A	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-19B	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-19C	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-19D	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		PB-6020T-PPB(180)
L2236590-19E	Amber 250ml unpreserved	A	7	7	2.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236590-19F	Amber 250ml unpreserved	A	7	7	2.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236590-20A	Vial HCl preserved	B	NA		5.8	Y	Absent		8011(14),PA-8260(14)
L2236590-20B	Vial HCl preserved	B	NA		5.8	Y	Absent		8011(14),PA-8260(14)
L2236590-20C	Vial Na2S2O3 preserved	NA	NA			Y	Absent		-



Project Name: PHILADELPHIA REFINERY
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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

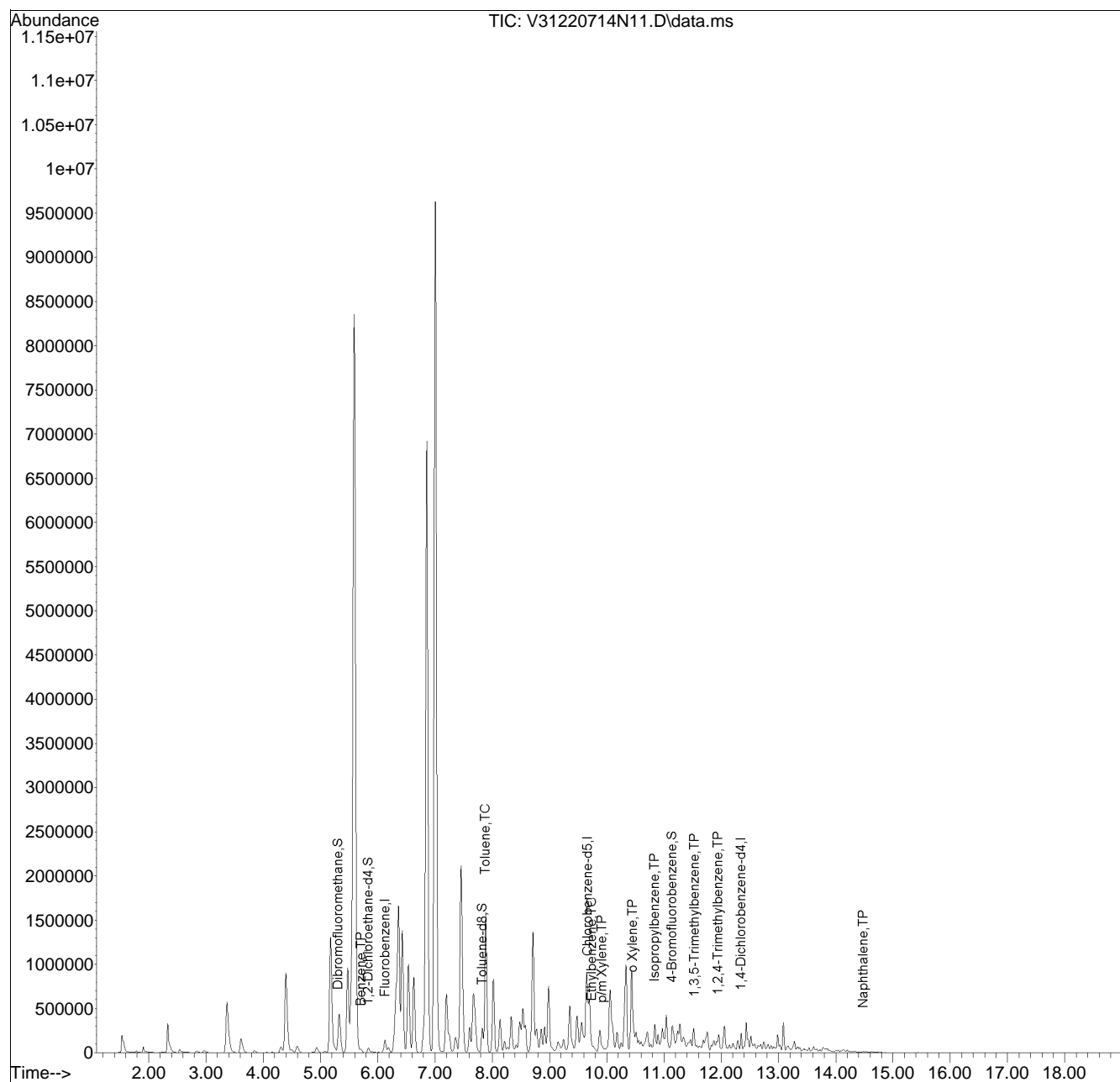
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\220714N\
 Data File : V31220714N1.D
 Acq On : 14 Jul 2022 10:51 pm
 Operator : VOA131:MKS
 Sample : 12236590-01,31,3.76,5,,b,r2f
 Misc : WG1663272,ICAL19050
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: Jul 15 08:04:31 2022
 Quant Method : I:\VOLATILES\VOA131\2022\220714N\V31_220525N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Tue May 31 11:11:48 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14N\V31220714N01.D•

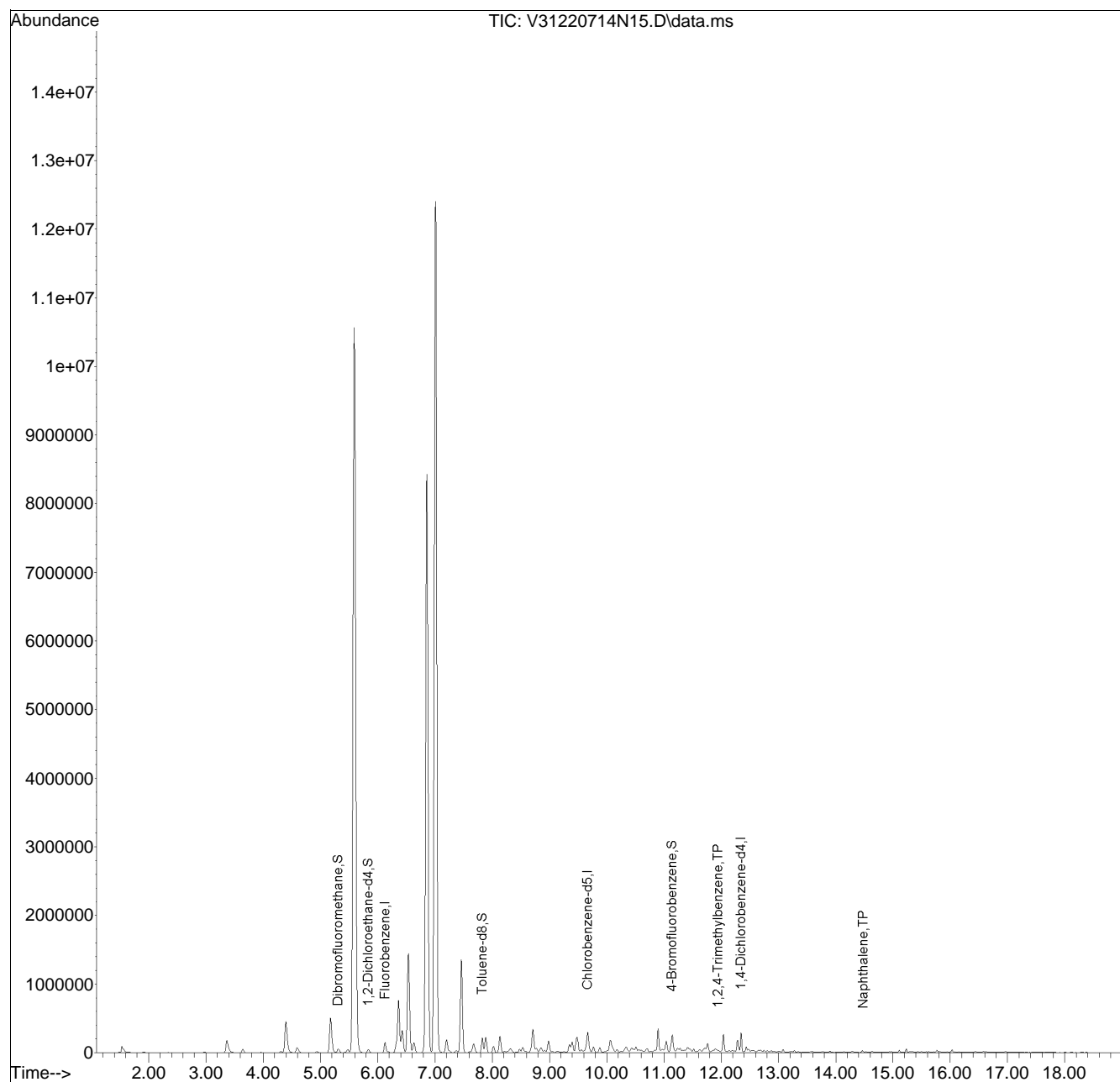


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\220714N\
Data File : V31220714N15.D
Acq On : 15 Jul 2022 12:22 am
Operator : VOA131:MKS
Sample : 12236590-15,31,4.91,5,,b,r2f
Misc : WG1663272,ICAL19050
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Jul 15 08:05:32 2022
Quant Method : I:\VOLATILES\VOA131\2022\220714N\V31_220525N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 31 11:11:48 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14N\V31220714N01.D•





ANALYTICAL REPORT

Lab Number:	L2236779
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/18/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236779

Report Date: 07/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236779-01	PB-848-01-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:00	07/11/22
L2236779-02	PB-848-02-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:10	07/11/22
L2236779-03	PB-848-03-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:20	07/11/22
L2236779-04	PB-848-04-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:30	07/11/22
L2236779-05	PB-848-05-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:40	07/11/22
L2236779-06	PB-848-06-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:50	07/11/22
L2236779-07	PB-848-07-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:00	07/11/22
L2236779-08	PB-848-08-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:10	07/11/22
L2236779-09	PB-848-09-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:20	07/11/22
L2236779-10	PB-848-10-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:30	07/11/22
L2236779-11	PB-848-11-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:40	07/11/22
L2236779-12	PB-848-12-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:50	07/11/22
L2236779-13	PB-848-13-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:00	07/11/22
L2236779-14	PB-848-14-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:10	07/11/22
L2236779-15	PB-848-15-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:20	07/11/22
L2236779-16	PB-848-16-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:30	07/11/22
L2236779-17	PB-848-17-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:40	07/11/22
L2236779-18	PB-848-18-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:50	07/11/22
L2236779-19	FB-071122-1	WATER	PHILADELPHIA, PA	07/11/22 14:00	07/11/22
L2236779-20	FB-071122-2	WATER	PHILADELPHIA, PA	07/11/22 14:05	07/11/22
L2236779-21	DUP-39	SOIL	PHILADELPHIA, PA	07/11/22 00:00	07/11/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2236779-04D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2236779-04D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (144%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-06: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (211%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-07: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2236779-07(Low): The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-11: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Case Narrative (continued)

L2236779-11: The internal standard (IS) response(s) for fluorobenzene (223%) was above the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was above method criteria all associated compounds are considered to have a potentially low bias.

L2236779-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (199%); however, low-level re-analysis was not performed due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. A high-level analysis was performed, and those results are also reported.

L2236779-11: The surrogate recovery is outside the method acceptance criteria for dibromofluoromethane (56%) due to interference with the Internal Standard.

L2236779-13: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2236779-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (153%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-18: The internal standard (IS) response(s) for fluorobenzene (422%) and the surrogate recoveries for dibromofluoromethane (27%) and 4-bromofluorobenzene (262%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was above method criteria, all associated compounds are considered to have a potentially low bias. A high-level analysis was performed, and those results are also reported.

Total Metals

L2236779-02, -03, -05, -07, -08, -10 and -18: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Case Narrative (continued)

The WG1661857-3 MS recovery, performed on L2236779-01, is outside the acceptance criteria for lead (74%). A post digestion spike was performed and yielded an unacceptable recovery for lead (69%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/18/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-01
 Client ID: PB-848-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 09:41
 Analyst: MKS
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.0010		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	0.0010	J	mg/kg	0.0023	0.00065	1
o-Xylene	0.00055	J	mg/kg	0.0012	0.00034	1
Xylenes, Total	0.0016	J	mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.00014	J	mg/kg	0.0012	0.00012	1
1,3,5-Trimethylbenzene	0.00026	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-02
 Client ID: PB-848-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 11:06
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00027	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00052	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-03
 Client ID: PB-848-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 11:35
 Analyst: JC
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-04 D
 Client ID: PB-848-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 12:04
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.51	0.051	4
Benzene	1.8		mg/kg	0.13	0.042	4
1,2-Dichloroethane	ND		mg/kg	0.25	0.065	4
Toluene	ND		mg/kg	0.25	0.14	4
1,2-Dibromoethane	ND		mg/kg	0.13	0.074	4
Ethylbenzene	0.90		mg/kg	0.25	0.036	4
p/m-Xylene	3.5		mg/kg	0.51	0.14	4
o-Xylene	0.32		mg/kg	0.25	0.074	4
Xylenes, Total	3.8		mg/kg	0.25	0.074	4
Isopropylbenzene	0.46		mg/kg	0.25	0.028	4
1,3,5-Trimethylbenzene	2.7		mg/kg	0.51	0.049	4
1,2,4-Trimethylbenzene	4.3		mg/kg	0.51	0.085	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	144	Q	70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-05
 Client ID: PB-848-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 12:33
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00074	J	mg/kg	0.0022	0.00023	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-06
 Client ID: PB-848-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:28
 Analyst: LAC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	ND		mg/kg	0.064	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	1.0		mg/kg	0.064	0.0090	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.064	0.019	1
Xylenes, Total	ND		mg/kg	0.064	0.019	1
Isopropylbenzene	3.0		mg/kg	0.064	0.0070	1
1,3,5-Trimethylbenzene	0.16		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	31.	E	mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	211	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-06 D
 Client ID: PB-848-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 13:02
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
1,2,4-Trimethylbenzene	35.		mg/kg	1.3	0.21	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-07
 Client ID: PB-848-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:55
 Analyst: LAC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.014	1
Benzene	0.14		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.067	0.017	1
Toluene	0.087		mg/kg	0.067	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	1.6		mg/kg	0.067	0.0095	1
p/m-Xylene	0.53		mg/kg	0.13	0.038	1
o-Xylene	0.032	J	mg/kg	0.067	0.020	1
Xylenes, Total	0.56	J	mg/kg	0.067	0.020	1
Isopropylbenzene	1.1		mg/kg	0.067	0.0073	1
1,3,5-Trimethylbenzene	1.0		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	2.2		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-07
 Client ID: PB-848-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 09:20
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00055	J	mg/kg	0.0018	0.00018	1
Benzene	0.016		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	0.0027		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.19		mg/kg	0.00089	0.00012	1
p/m-Xylene	0.033		mg/kg	0.0018	0.00050	1
o-Xylene	0.0021		mg/kg	0.00089	0.00026	1
Xylenes, Total	0.035		mg/kg	0.00089	0.00026	1
Isopropylbenzene	0.11		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	0.089		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.19		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	124		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	85		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-08
 Client ID: PB-848-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 14:10
 Analyst: LAC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00030	J	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.0067		mg/kg	0.00092	0.00013	1
p/m-Xylene	0.00093	J	mg/kg	0.0018	0.00052	1
o-Xylene	0.00040	J	mg/kg	0.00092	0.00027	1
Xylenes, Total	0.0013	J	mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.0099		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	0.0047		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.037		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-09
 Client ID: PB-848-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 14:36
 Analyst: LAC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00022	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	0.00046	J	mg/kg	0.00098	0.00014	1
p/m-Xylene	0.00064	J	mg/kg	0.0020	0.00055	1
o-Xylene	0.00029	J	mg/kg	0.00098	0.00029	1
Xylenes, Total	0.00093	J	mg/kg	0.00098	0.00029	1
Isopropylbenzene	0.0011		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	0.00028	J	mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.0013	J	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-10
 Client ID: PB-848-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 14:59
 Analyst: JC
 Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	0.00052	J	mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.0024		mg/kg	0.0012	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00070	1
o-Xylene	ND		mg/kg	0.0012	0.00037	1
Xylenes, Total	ND		mg/kg	0.0012	0.00037	1
Isopropylbenzene	0.0066		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	0.00047	J	mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.00081	J	mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-11
 Client ID: PB-848-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 15:29
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.87		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.068	0.017	1
Toluene	0.12		mg/kg	0.068	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	0.16		mg/kg	0.068	0.0095	1
p/m-Xylene	0.36		mg/kg	0.14	0.038	1
o-Xylene	0.034	J	mg/kg	0.068	0.020	1
Xylenes, Total	0.39	J	mg/kg	0.068	0.020	1
Isopropylbenzene	0.29		mg/kg	0.068	0.0074	1
1,3,5-Trimethylbenzene	0.076	J	mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	0.12	J	mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-11
 Client ID: PB-848-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:02
 Analyst: LAC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	0.0039		mg/kg	0.00068	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	0.0059		mg/kg	0.0014	0.00074	1
1,2-Dibromoethane	ND		mg/kg	0.00068	0.00040	1
Ethylbenzene	0.0015		mg/kg	0.0014	0.00019	1
p/m-Xylene	0.018		mg/kg	0.0027	0.00076	1
o-Xylene	0.0043		mg/kg	0.0014	0.00039	1
Xylenes, Total	0.022		mg/kg	0.0014	0.00039	1
Isopropylbenzene	0.14		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	0.0018	J	mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	0.0038		mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	123		70-130
4-Bromofluorobenzene	199	Q	70-130
Dibromofluoromethane	56	Q	70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-12
 Client ID: PB-848-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:43
 Analyst: LAC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-13
 Client ID: PB-848-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 16:28
 Analyst: JC
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	ND		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.072	0.018	1
Toluene	0.039	J	mg/kg	0.072	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.018	J	mg/kg	0.072	0.010	1
p/m-Xylene	ND		mg/kg	0.14	0.040	1
o-Xylene	ND		mg/kg	0.072	0.021	1
Xylenes, Total	ND		mg/kg	0.072	0.021	1
Isopropylbenzene	0.010	J	mg/kg	0.072	0.0078	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	153	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-14
 Client ID: PB-848-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 16:56
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00019	J	mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	0.00017	J	mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.00079	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-15
 Client ID: PB-848-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 16:21
 Analyst: LAC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	1.1		mg/kg	0.028	0.0092	1
1,2-Dichloroethane	ND		mg/kg	0.055	0.014	1
Toluene	0.078		mg/kg	0.055	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	16.		mg/kg	0.055	0.0078	1
p/m-Xylene	34.	E	mg/kg	0.11	0.031	1
o-Xylene	0.038	J	mg/kg	0.055	0.016	1
Isopropylbenzene	2.4		mg/kg	0.055	0.0060	1
1,3,5-Trimethylbenzene	4.0		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	7.7		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-15 D
 Client ID: PB-848-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 17:25
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
p/m-Xylene	38.		mg/kg	2.2	0.62	20
Xylenes, Total	38.	J	mg/kg	0.055	0.016	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-16
 Client ID: PB-848-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 17:54
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-17
 Client ID: PB-848-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 18:22
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0031	0.00031	1
Benzene	ND		mg/kg	0.00077	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00040	1
Toluene	ND		mg/kg	0.0015	0.00084	1
1,2-Dibromoethane	ND		mg/kg	0.00077	0.00045	1
Ethylbenzene	ND		mg/kg	0.0015	0.00022	1
p/m-Xylene	ND		mg/kg	0.0031	0.00087	1
o-Xylene	ND		mg/kg	0.0015	0.00045	1
Xylenes, Total	ND		mg/kg	0.0015	0.00045	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0031	0.00030	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0031	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-18
 Client ID: PB-848-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:17
 Analyst: LAC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00091		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.0043		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	0.0057		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.026		mg/kg	0.0020	0.00057	1
o-Xylene	0.0084		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.034		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.037		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0051		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.030		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	262	Q	70-130
Dibromofluoromethane	27	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-18
 Client ID: PB-848-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 10:54
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	0.010	J	mg/kg	0.027	0.0089	1
1,2-Dichloroethane	ND		mg/kg	0.054	0.014	1
Toluene	ND		mg/kg	0.054	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	0.017	J	mg/kg	0.054	0.0076	1
p/m-Xylene	0.056	J	mg/kg	0.11	0.030	1
o-Xylene	ND		mg/kg	0.054	0.016	1
Xylenes, Total	0.056	J	mg/kg	0.054	0.016	1
Isopropylbenzene	0.060		mg/kg	0.054	0.0058	1
1,3,5-Trimethylbenzene	0.011	J	mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	0.058	J	mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-19
 Client ID: FB-071122-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:46
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-19
 Client ID: FB-071122-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 21:45
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	130		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-20
 Client ID: FB-071122-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:05
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:53
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-20
 Client ID: FB-071122-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:05
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 22:11
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	130		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-21
 Client ID: DUP-39
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 12:50
 Analyst: LAC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00057	J	mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/13/22 14:45
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-20 Batch: WG1662273-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/14/22 09:12
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 04,06,11,13,15 Batch: WG1662882-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/13/22 17:26
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1663309-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	119		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/14/22 09:12
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03,05,10,14,16-17 Batch: WG1663423-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	95		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 11:31
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 06-07,15 Batch: WG1663910-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/15/22 11:31
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 08-09,11-12,18,21 Batch: WG1663911-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/18/22 08:56
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07 Batch: WG1664169-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/18/22 08:56
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 18 Batch: WG1664170-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 19-20 Batch: WG1662273-2									
1,2-Dibromoethane	110		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04,06,11,13,15 Batch: WG1662882-3 WG1662882-4								
Methyl tert butyl ether	118		118		66-130	0		30
Benzene	106		109		70-130	3		30
1,2-Dichloroethane	100		101		70-130	1		30
Toluene	108		108		70-130	0		30
1,2-Dibromoethane	108		108		70-130	0		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	106		107		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	113		112		70-130	1		30
1,3,5-Trimethylbenzene	109		108		70-130	1		30
1,2,4-Trimethylbenzene	110		109		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	103		102		70-130
4-Bromofluorobenzene	109		107		70-130
Dibromofluoromethane	92		92		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236779

Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1663309-3 WG1663309-4								
Methyl tert butyl ether	95		97		63-130	2		20
Benzene	98		100		70-130	2		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	95		96		70-130	1		20
Ethylbenzene	94		96		70-130	2		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		92		70-130	4		20
1,3,5-Trimethylbenzene	91		95		64-130	4		20
1,2,4-Trimethylbenzene	90		94		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		105		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	102		94		70-130
Dibromofluoromethane	102		104		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03,05,10,14,16-17 Batch: WG1663423-3 WG1663423-4								
Methyl tert butyl ether	118		118		66-130	0		30
Benzene	106		109		70-130	3		30
1,2-Dichloroethane	100		101		70-130	1		30
Toluene	108		108		70-130	0		30
1,2-Dibromoethane	108		108		70-130	0		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	106		107		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	113		112		70-130	1		30
1,3,5-Trimethylbenzene	109		108		70-130	1		30
1,2,4-Trimethylbenzene	110		109		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	103		102		70-130
4-Bromofluorobenzene	109		107		70-130
Dibromofluoromethane	91		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 06-07,15 Batch: WG1663910-3 WG1663910-4								
Methyl tert butyl ether	84		81		66-130	4		30
Benzene	84		79		70-130	6		30
1,2-Dichloroethane	84		81		70-130	4		30
Toluene	84		79		70-130	6		30
1,2-Dibromoethane	92		87		70-130	6		30
Ethylbenzene	84		79		70-130	6		30
p/m-Xylene	89		83		70-130	7		30
o-Xylene	87		83		70-130	5		30
Isopropylbenzene	82		78		70-130	5		30
1,3,5-Trimethylbenzene	82		79		70-130	4		30
1,2,4-Trimethylbenzene	81		78		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	99		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	83		84		70-130
Dibromofluoromethane	106		103		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09,11-12,18,21 Batch: WG1663911-3 WG1663911-4								
Methyl tert butyl ether	84		81		66-130	4		30
Benzene	84		79		70-130	6		30
1,2-Dichloroethane	84		81		70-130	4		30
Toluene	84		79		70-130	6		30
1,2-Dibromoethane	92		87		70-130	6		30
Ethylbenzene	84		79		70-130	6		30
p/m-Xylene	89		83		70-130	7		30
o-Xylene	87		83		70-130	5		30
Isopropylbenzene	82		78		70-130	5		30
1,3,5-Trimethylbenzene	82		79		70-130	4		30
1,2,4-Trimethylbenzene	81		78		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	99		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	83		83		70-130
Dibromofluoromethane	106		103		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07 Batch: WG1664169-3 WG1664169-4								
Methyl tert butyl ether	103		90		66-130	13		30
Benzene	91		87		70-130	4		30
1,2-Dichloroethane	69	Q	69	Q	70-130	0		30
Toluene	90		83		70-130	8		30
1,2-Dibromoethane	94		90		70-130	4		30
Ethylbenzene	88		83		70-130	6		30
p/m-Xylene	91		88		70-130	3		30
o-Xylene	90		87		70-130	3		30
Isopropylbenzene	89		81		70-130	9		30
1,3,5-Trimethylbenzene	88		81		70-130	8		30
1,2,4-Trimethylbenzene	88		82		70-130	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	78		78		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	92		92		70-130
Dibromofluoromethane	93		91		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 18 Batch: WG1664170-3 WG1664170-4								
Methyl tert butyl ether	103		90		66-130	13		30
Benzene	91		87		70-130	4		30
1,2-Dichloroethane	69	Q	69	Q	70-130	0		30
Toluene	90		83		70-130	8		30
1,2-Dibromoethane	94		90		70-130	4		30
Ethylbenzene	88		83		70-130	6		30
p/m-Xylene	91		88		70-130	3		30
o-Xylene	90		87		70-130	3		30
Isopropylbenzene	89		81		70-130	9		30
1,3,5-Trimethylbenzene	88		81		70-130	8		30
1,2,4-Trimethylbenzene	88		82		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	78		78		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	92		92		70-130
Dibromofluoromethane	93		91		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-01
 Client ID: PB-848-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 12:16
 Analyst: CMM
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	100		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-02
 Client ID: PB-848-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 12:40
 Analyst: CMM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	0.029	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-03
 Client ID: PB-848-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 13:04
 Analyst: CMM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.024	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	83		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-04
 Client ID: PB-848-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 13:29
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.4		mg/kg	0.20	0.025	1
Fluorene	2.3		mg/kg	0.20	0.020	1
Phenanthrene	1.9		mg/kg	0.12	0.025	1
Anthracene	0.29		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-05
 Client ID: PB-848-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 13:53
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.034	J	mg/kg	0.20	0.024	1
Fluorene	0.069	J	mg/kg	0.20	0.019	1
Phenanthrene	0.054	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	76		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-06
 Client ID: PB-848-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 14:17
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.7		mg/kg	0.20	0.025	1
Fluorene	0.14	J	mg/kg	0.20	0.020	1
Phenanthrene	0.15		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	78		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-07
 Client ID: PB-848-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 14:41
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.26		mg/kg	0.20	0.024	1
Fluorene	0.089	J	mg/kg	0.20	0.019	1
Phenanthrene	0.059	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.025	J	mg/kg	0.12	0.022	1
Chrysene	0.028	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.049	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.065	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.064	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	67		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-08
 Client ID: PB-848-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 15:05
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-09
 Client ID: PB-848-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 15:30
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.034	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	76		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-10
 Client ID: PB-848-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 15:54
 Analyst: CMM
 Percent Solids: 72%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.23	0.028	1
Fluorene	ND		mg/kg	0.23	0.022	1
Phenanthrene	ND		mg/kg	0.14	0.028	1
Anthracene	ND		mg/kg	0.14	0.044	1
Pyrene	ND		mg/kg	0.14	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.14	0.025	1
Chrysene	ND		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	ND		mg/kg	0.14	0.038	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.055	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	74		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-11
 Client ID: PB-848-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 16:18
 Analyst: CMM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.25		mg/kg	0.19	0.018	1
Phenanthrene	0.35		mg/kg	0.11	0.023	1
Anthracene	0.081	J	mg/kg	0.11	0.037	1
Pyrene	0.058	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.029	J	mg/kg	0.11	0.021	1
Chrysene	0.034	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.037	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.039	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-12
 Client ID: PB-848-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 16:42
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.043	J	mg/kg	0.21	0.025	1
Fluorene	0.13	J	mg/kg	0.21	0.020	1
Phenanthrene	0.68		mg/kg	0.12	0.025	1
Anthracene	0.19		mg/kg	0.12	0.040	1
Pyrene	0.51		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.33		mg/kg	0.12	0.023	1
Chrysene	0.30		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.36		mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.30		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-13
 Client ID: PB-848-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 17:07
 Analyst: CMM
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.022	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-14
 Client ID: PB-848-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 17:31
 Analyst: CMM
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	53		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-15
 Client ID: PB-848-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 17:55
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-16
 Client ID: PB-848-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 18:19
 Analyst: CMM
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	70		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-17
 Client ID: PB-848-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 18:43
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.026	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.34		mg/kg	0.12	0.024	1
Anthracene	0.090	J	mg/kg	0.12	0.038	1
Pyrene	0.79		mg/kg	0.12	0.019	1
Benzo(a)anthracene	4.5		mg/kg	0.12	0.022	1
Chrysene	4.4		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	4.4		mg/kg	0.12	0.033	1
Benzo(a)pyrene	7.2		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	5.2		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-18
 Client ID: PB-848-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 19:08
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-19
 Client ID: FB-071122-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/13/22 12:21
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	0.04	J	ug/l	0.05	0.02	1
Anthracene	0.02	J	ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	32		23-120
2-Fluorobiphenyl	28		15-120
4-Terphenyl-d14	32	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-20
 Client ID: FB-071122-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:05
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/13/22 12:38
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.05	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	42		23-120
2-Fluorobiphenyl	44		15-120
4-Terphenyl-d14	47		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-21
 Client ID: DUP-39
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 19:32
 Analyst: CMM
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.091	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.080	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.055	J	mg/kg	0.12	0.022	1
Chrysene	0.048	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.053	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.048	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.026	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	58		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D-SIM
 Analytical Date: 07/13/22 11:32
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1661883-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	0.02	J	ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	46		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/13/22 11:03
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-18,21 Batch: WG1662002-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	82		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1661883-2 WG1661883-3								
Naphthalene	50		123		40-140	84	Q	40
Fluorene	51		125		40-140	84	Q	40
Phenanthrene	50		123		40-140	84	Q	40
Anthracene	50		123		40-140	84	Q	40
Pyrene	51		129	Q	26-127	87	Q	40
Benzo(a)anthracene	48		123		40-140	88	Q	40
Chrysene	49		124		40-140	87	Q	40
Benzo(b)fluoranthene	52		138		40-140	91	Q	40
Benzo(a)pyrene	49		134		40-140	93	Q	40
Benzo(ghi)perylene	52		137		40-140	90	Q	40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	24		28		23-120
2-Fluorobiphenyl	25		30		15-120
4-Terphenyl-d14	26	Q	32	Q	41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-18,21 Batch: WG1662002-2 WG1662002-3								
Naphthalene	63		66		40-140	5		50
Fluorene	66		68		40-140	3		50
Phenanthrene	65		69		40-140	6		50
Anthracene	68		73		40-140	7		50
Pyrene	67		71		35-142	6		50
Benzo(a)anthracene	69		75		40-140	8		50
Chrysene	69		76		40-140	10		50
Benzo(b)fluoranthene	70		76		40-140	8		50
Benzo(a)pyrene	76		81		40-140	6		50
Benzo(ghi)perylene	68		74		40-140	8		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	66		70		23-120
2-Fluorobiphenyl	63		65		30-120
4-Terphenyl-d14	68		71		18-120

METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-01

Date Collected: 07/11/22 09:00

Client ID: PB-848-01-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.75		mg/kg	2.41	0.129	1	07/13/22 06:00	07/16/22 19:12	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-02

Date Collected: 07/11/22 09:10

Client ID: PB-848-02-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	26.2		mg/kg	4.38	0.235	2	07/13/22 06:00	07/18/22 16:25	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-03

Date Collected: 07/11/22 09:20

Client ID: PB-848-03-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	51.6		mg/kg	4.24	0.227	2	07/13/22 06:00	07/17/22 12:00	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-04
 Client ID: PB-848-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	716		mg/kg	2.44	0.130	1	07/13/22 06:00	07/16/22 19:52	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-05
 Client ID: PB-848-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.21		mg/kg	4.59	0.246	2	07/13/22 06:00	07/17/22 12:05	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-06

Date Collected: 07/11/22 09:50

Client ID: PB-848-06-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.20		mg/kg	2.39	0.128	1	07/13/22 06:00	07/16/22 20:02	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-07
 Client ID: PB-848-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3200		mg/kg	4.73	0.253	2	07/13/22 06:00	07/17/22 12:10	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-08

Date Collected: 07/11/22 10:10

Client ID: PB-848-08-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	246		mg/kg	4.70	0.252	2	07/13/22 06:00	07/17/22 12:15	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-09
 Client ID: PB-848-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1140		mg/kg	2.41	0.129	1	07/13/22 06:00	07/16/22 20:17	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-10

Date Collected: 07/11/22 10:30

Client ID: PB-848-10-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	721		mg/kg	5.48	0.294	2	07/13/22 06:00	07/17/22 12:20	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-11

Date Collected: 07/11/22 10:40

Client ID: PB-848-11-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	15.0		mg/kg	2.24	0.120	1	07/13/22 06:00	07/16/22 20:27	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-12
 Client ID: PB-848-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	282		mg/kg	2.36	0.126	1	07/13/22 06:00	07/16/22 20:32	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-13

Date Collected: 07/11/22 11:00

Client ID: PB-848-13-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	28.5		mg/kg	2.46	0.132	1	07/13/22 06:00	07/16/22 20:48	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-14

Date Collected: 07/11/22 11:10

Client ID: PB-848-14-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	15.7		mg/kg	2.42	0.130	1	07/13/22 06:00	07/16/22 20:53	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-15

Date Collected: 07/11/22 11:20

Client ID: PB-848-15-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.28		mg/kg	2.29	0.123	1	07/13/22 06:00	07/16/22 20:58	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-16
 Client ID: PB-848-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.41		mg/kg	2.32	0.124	1	07/13/22 06:00	07/16/22 21:03	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-17

Date Collected: 07/11/22 11:40

Client ID: PB-848-17-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1840		mg/kg	2.29	0.122	1	07/13/22 06:00	07/16/22 21:08	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-18

Date Collected: 07/11/22 11:50

Client ID: PB-848-18-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	60.7		mg/kg	11.4	0.609	5	07/13/22 06:00	07/17/22 13:08	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-19

Date Collected: 07/11/22 14:00

Client ID: FB-071122-1

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 23:01	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-20

Date Collected: 07/11/22 14:05

Client ID: FB-071122-2

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 23:06	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-21

Date Collected: 07/11/22 00:00

Client ID: DUP-39

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	18.8		mg/kg	2.22	0.119	1	07/13/22 06:00	07/16/22 21:18	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1661768-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 21:46	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18,21 Batch: WG1661857-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/13/22 06:00	07/16/22 18:46	1,6010D	MC

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1661768-2								
Lead, Total	98		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 Batch: WG1661857-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128	-		

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-3 QC Sample: L2236831-01 Client ID: MS Sample												
Lead, Total	488.2	530	818.1	62	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 QC Batch ID: WG1661857-3 QC Sample: L2236779-01 Client ID: PB-848-01-SS01												
Lead, Total	6.75	50.7	44.3	74	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236779

Report Date: 07/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-4 QC Sample: L2236831-01 Client ID: DUP Sample						
Lead, Total	488.2	359.8	ug/l	30	Q	20
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 QC Batch ID: WG1661857-4 QC Sample: L2236779-01 Client ID: PB-848-01-SS01						
Lead, Total	6.75	6.99	mg/kg	3		20

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

**Lab Serial Dilution
Analysis
Batch Quality Control**

Lab Number: L2236779

Report Date: 07/18/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-6 QC Sample: L2236831-01 Client ID: DUP Sample						
Lead, Total	488.2	429.6	ug/l	12		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-01

Date Collected: 07/11/22 09:00

Client ID: PB-848-01-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.6		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-02

Date Collected: 07/11/22 09:10

Client ID: PB-848-02-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-03

Date Collected: 07/11/22 09:20

Client ID: PB-848-03-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-04

Date Collected: 07/11/22 09:30

Client ID: PB-848-04-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.9		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-05

Date Collected: 07/11/22 09:40

Client ID: PB-848-05-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-06

Date Collected: 07/11/22 09:50

Client ID: PB-848-06-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-07

Date Collected: 07/11/22 10:00

Client ID: PB-848-07-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-08

Date Collected: 07/11/22 10:10

Client ID: PB-848-08-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-09

Date Collected: 07/11/22 10:20

Client ID: PB-848-09-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-10

Date Collected: 07/11/22 10:30

Client ID: PB-848-10-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.1		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-11

Date Collected: 07/11/22 10:40

Client ID: PB-848-11-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.3		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-12

Date Collected: 07/11/22 10:50

Client ID: PB-848-12-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.6		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-13

Date Collected: 07/11/22 11:00

Client ID: PB-848-13-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-14

Date Collected: 07/11/22 11:10

Client ID: PB-848-14-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.1		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-15

Date Collected: 07/11/22 11:20

Client ID: PB-848-15-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-16

Date Collected: 07/11/22 11:30

Client ID: PB-848-16-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.4		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-17

Date Collected: 07/11/22 11:40

Client ID: PB-848-17-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-18

Date Collected: 07/11/22 11:50

Client ID: PB-848-18-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-21

Date Collected: 07/11/22 00:00

Client ID: DUP-39

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236779

Report Date: 07/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18,21 QC Batch ID: WG1661707-1 QC Sample: L2236779-01 Client ID: PB-848-01-SS01						
Solids, Total	79.6	79.1	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-01A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-01B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-01C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-01D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-01F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-02A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-02B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-02C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-02D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-02E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-02F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-03A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-03B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-03C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-03D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-03E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-03F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-04A	Vial MeOH preserved	A	NA		4.4	Y	Absent		PA-8260HLW(14)
L2236779-04B	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-04C	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-04D	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		TS(7)
L2236779-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.4	Y	Absent		PB-TI(180)
L2236779-04F	Glass 120ml/4oz unpreserved	A	NA		4.4	Y	Absent		PA-PAH(14)
L2236779-05A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-05B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-05C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-05D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-05F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-06A	Vial MeOH preserved	A	NA		4.4	Y	Absent		PA-8260HLW(14)
L2236779-06B	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-06C	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-06D	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		TS(7)
L2236779-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.4	Y	Absent		PB-TI(180)
L2236779-06F	Glass 120ml/4oz unpreserved	A	NA		4.4	Y	Absent		PA-PAH(14)
L2236779-07A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236779-07B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-07C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-07D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-07F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-08A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-08B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-08C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-08D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-08E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-08F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-09A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)

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Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-09B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-09C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-09D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-09E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-09F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-10A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-10B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-10C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-10D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-10E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-10F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-11A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236779-11B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-11C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-11D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-11F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-12A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-12B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-12C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-12D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-12F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-13A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-13B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-13C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-13D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-13E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)

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Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-13F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-14A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-14B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-14C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-14D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-14E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-14F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-15A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-15B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-15C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-15D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-15F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-16A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-16B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-16C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-16D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-16E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-16F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-17A	Vial MeOH preserved	A	NA		4.4	Y	Absent		PA-8260HLW(14)
L2236779-17B	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-17C	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-17D	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		TS(7)
L2236779-17E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.4	Y	Absent		PB-TI(180)
L2236779-17F	Glass 120ml/4oz unpreserved	A	NA		4.4	Y	Absent		PA-PAH(14)
L2236779-18A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236779-18B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-18C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-18D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-18E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-18F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-19A	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-19B	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-19C	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-19D	Plastic 250ml HNO3 preserved	A	<2	<2	4.4	Y	Absent		PB-6020T-PPB(180)
L2236779-19E	Amber 250ml unpreserved	A	7	7	4.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236779-19F	Amber 250ml unpreserved	A	7	7	4.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236779-20A	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-20B	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-20C	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-20D	Plastic 250ml HNO3 preserved	A	<2	<2	4.4	Y	Absent		PB-6020T-PPB(180)
L2236779-20E	Amber 250ml unpreserved	A	7	7	4.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236779-20F	Amber 250ml unpreserved	A	7	7	4.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236779-21A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-21B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-21C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-21D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-21E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-21F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)



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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

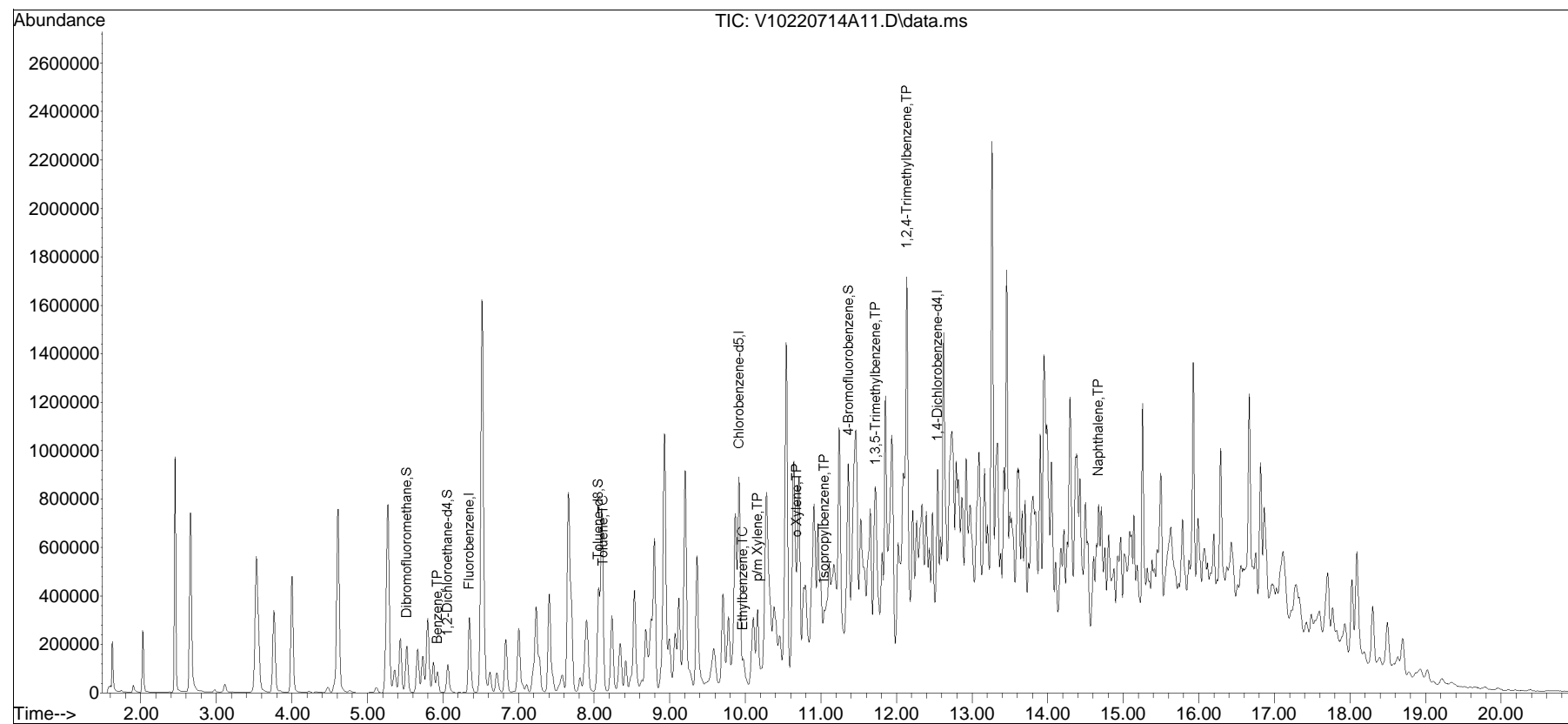
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220714A\
Data File : V10220714A11.D
Acq On : 14 Jul 2022 12:04 pm
Operator : VOA110:JC
Sample : 12236779-04D,31h,5.98,5,0.025,,a,r2f
Misc : WG1662882,ICAL18890
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Jul 15 09:26:26 2022
Quant Method : I:\VOLATILES\VOA110\2022\220714A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14A\V10220714A01.D•

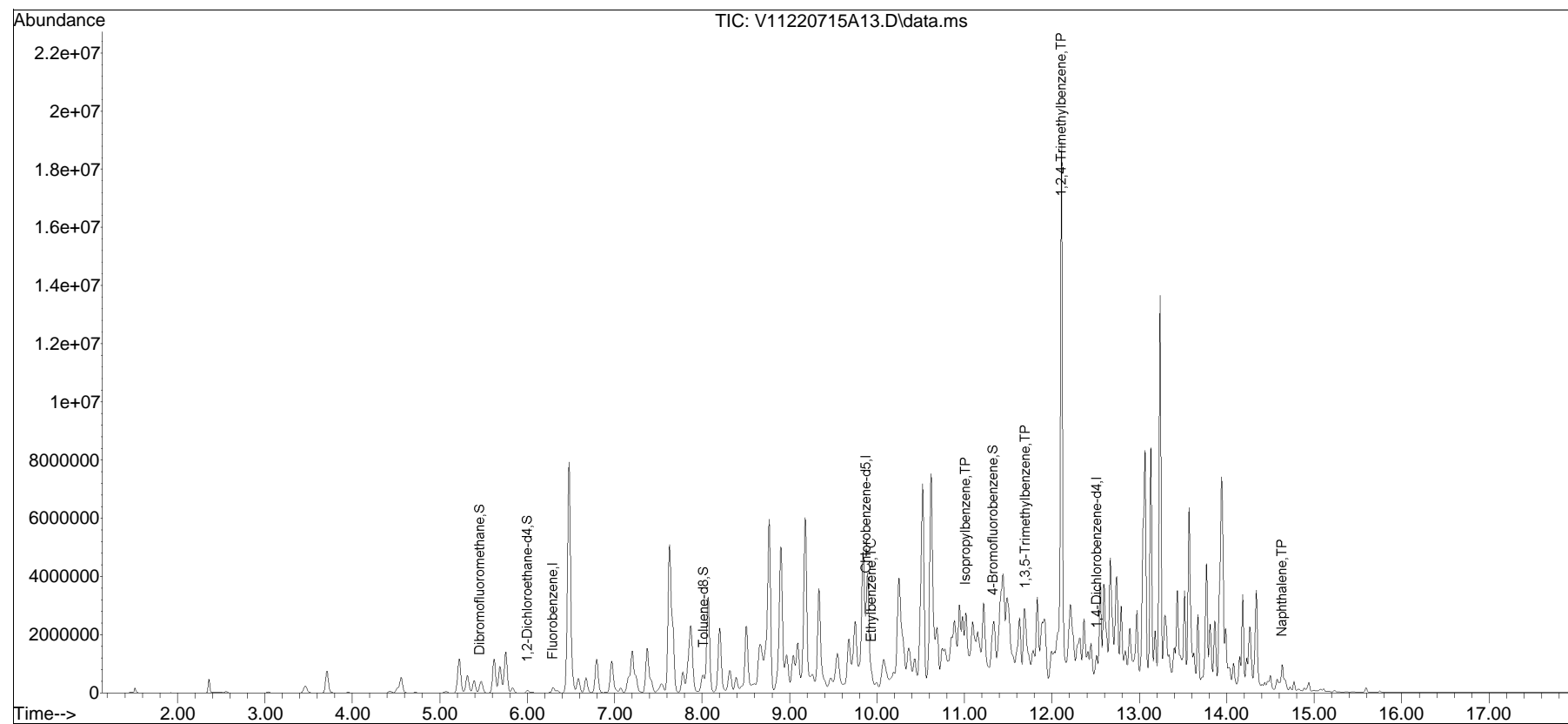


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220715A\
Data File : V11220715A13.D
Acq On : 15 Jul 2022 03:28 pm
Operator : VOA111:LAC
Sample : L2236779-06,31H,5.94,5,0.100,,A,R2F
Misc : WG1663910,ICAL19072
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Jul 16 17:28:29 2022
Quant Method : I:\VOLATILES\VOA111\2022\220715A\V111_220608A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V11220715A02.D•

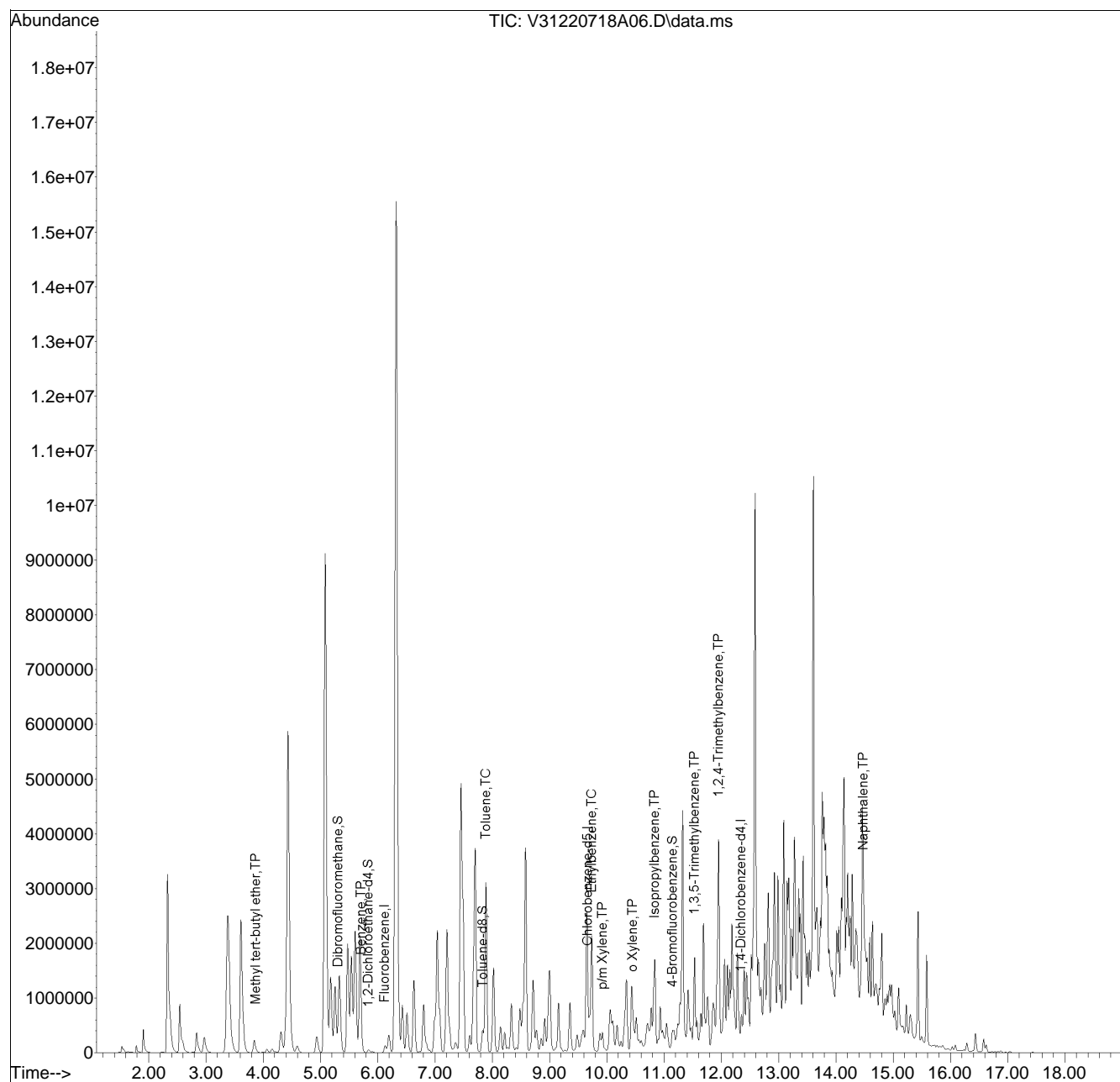


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\220718A\
 Data File : V31220718A06.D
 Acq On : 18 Jul 2022 09:20 am
 Operator : VOA131:MKS
 Sample : 12236779-07,31,6.77,5,,b,r2f
 Misc : WG1664169,ICAL19050
 ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jul 18 10:15:35 2022
 Quant Method : I:\VOLATILES\VOA131\2022\220718A\V31_220525N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Tue May 31 11:11:48 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V31220718A01.D•

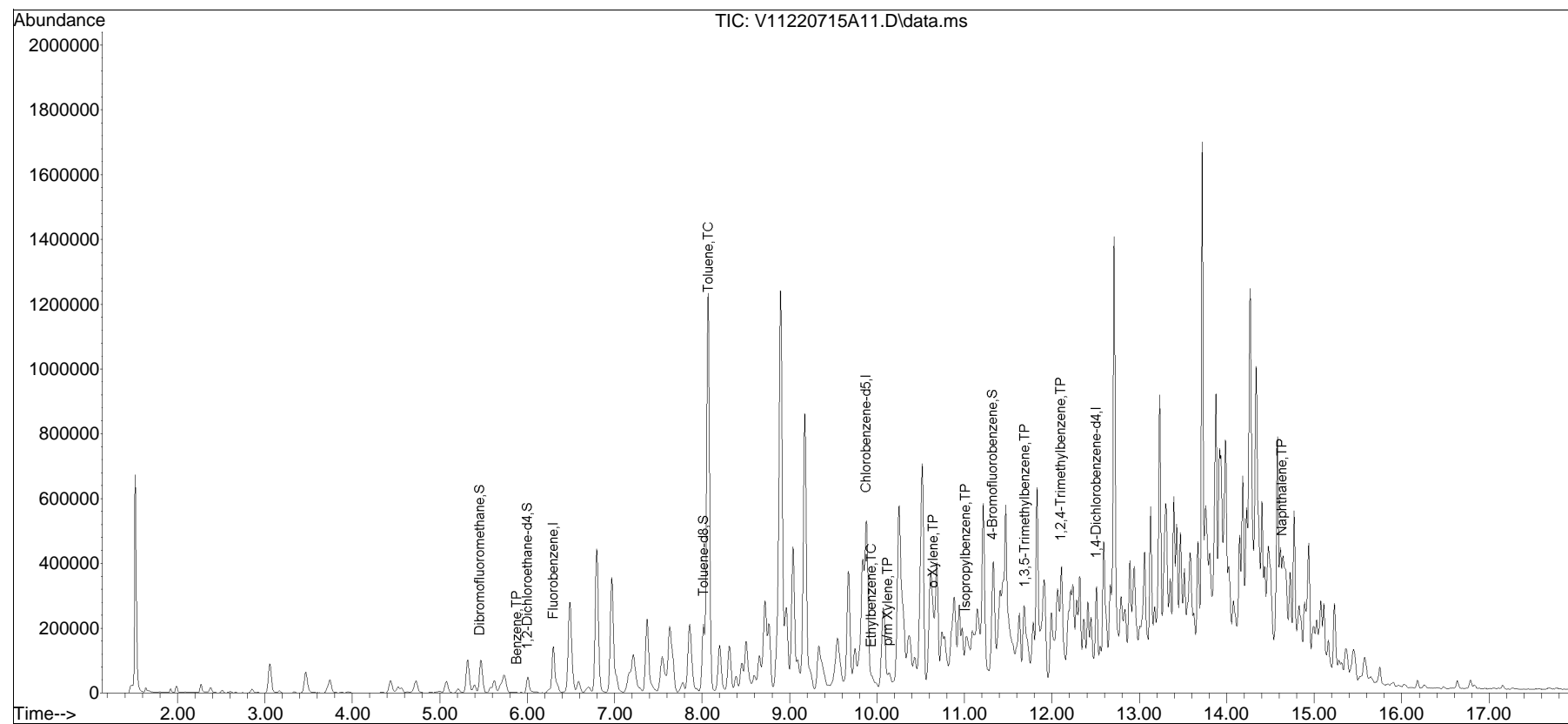


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220715A\
Data File : V11220715A11.D
Acq On : 15 Jul 2022 02:36 pm
Operator : VOA111:LAC
Sample : L2236779-09,31,6.29,5,,B,R2F
Misc : WG1663911,ICAL19072
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Jul 16 17:27:37 2022
Quant Method : I:\VOLATILES\VOA111\2022\220715A\V111_220608A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V11220715A02.D•

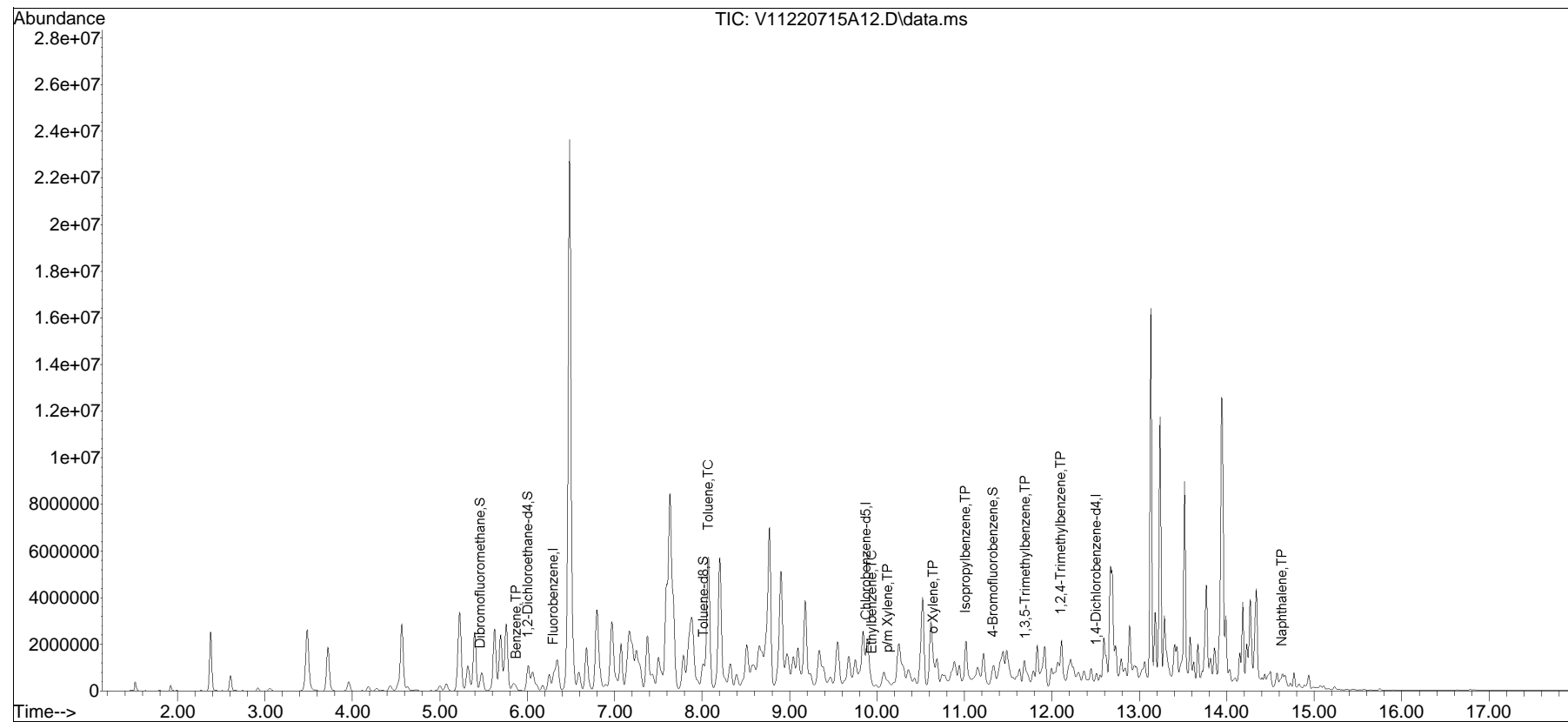


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220715A\
Data File : V11220715A12.D
Acq On : 15 Jul 2022 03:02 pm
Operator : VOA111:LAC
Sample : L2236779-11,31,4.28,5,,B,R2F
Misc : WG1663911,ICAL19072
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Jul 16 17:27:58 2022
Quant Method : I:\VOLATILES\VOA111\2022\220715A\V111_220608A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V11220715A02.D•

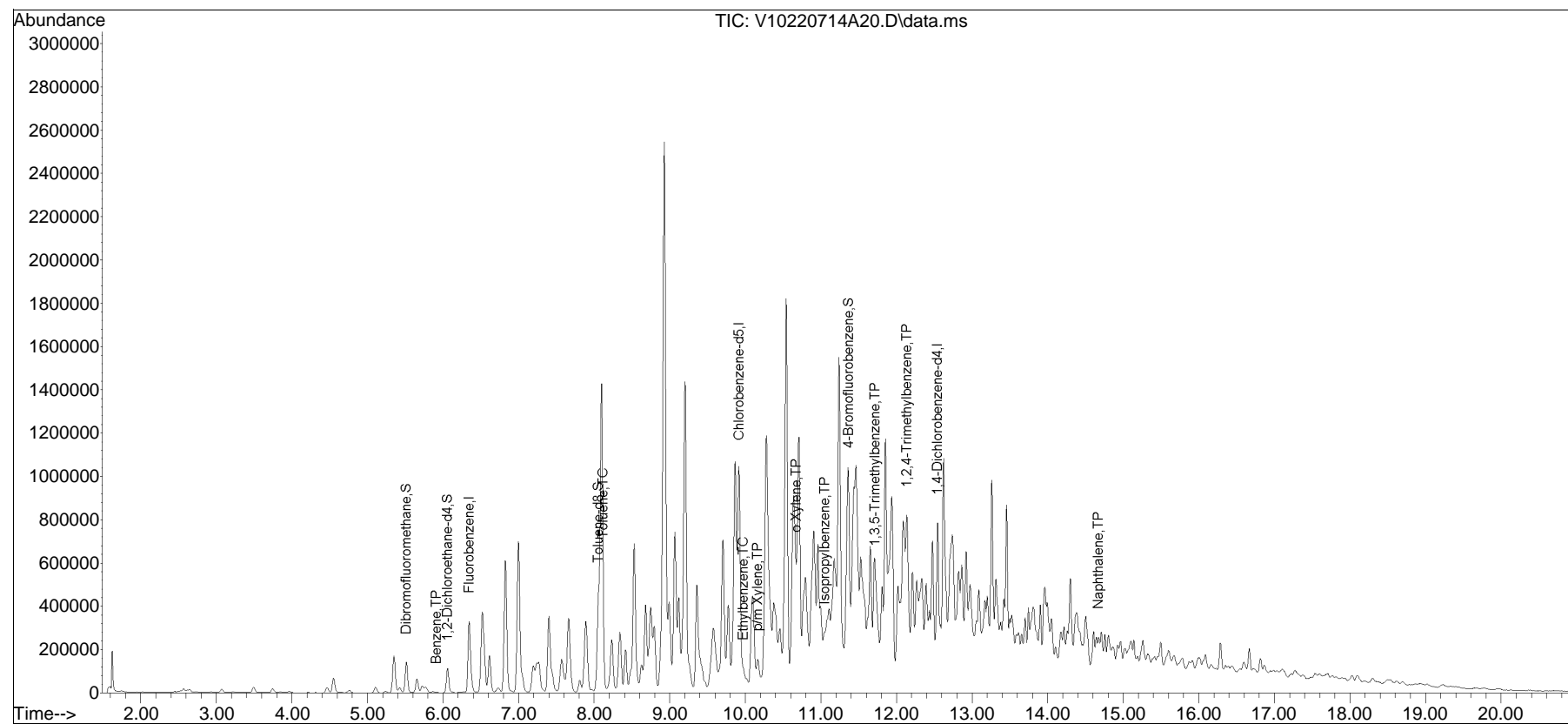


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220714A\
Data File : V10220714A20.D
Acq On : 14 Jul 2022 4:28 pm
Operator : VOA110:JC
Sample : 12236779-13,31h,5.46,5,0.100,,a,r2f
Misc : WG1662882,ICAL18890
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Jul 15 09:20:24 2022
Quant Method : I:\VOLATILES\VOA110\2022\220714A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14A\V10220714A01.D•

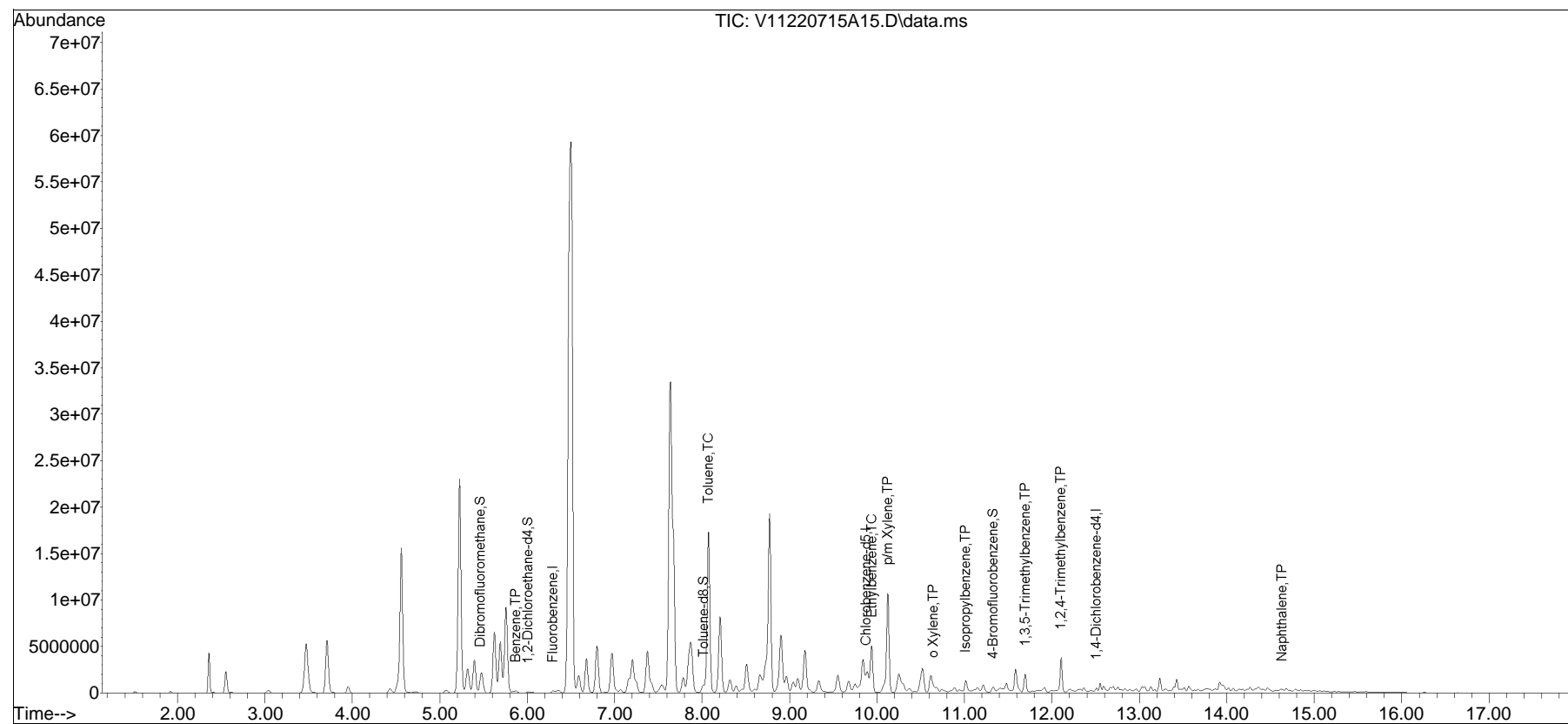


Quantitation Report (QT Reviewed)

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Data File : V11220715A15.D
Acq On : 15 Jul 2022 04:21 pm
Operator : VOA111:LAC
Sample : L2236779-15,31H,6.49,5,0.100,,A,R2F
Misc : WG1663910,ICAL19072
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Jul 16 17:30:19 2022
Quant Method : I:\VOLATILES\VOA111\2022\220715A\V111_220608A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V11220715A02.D•

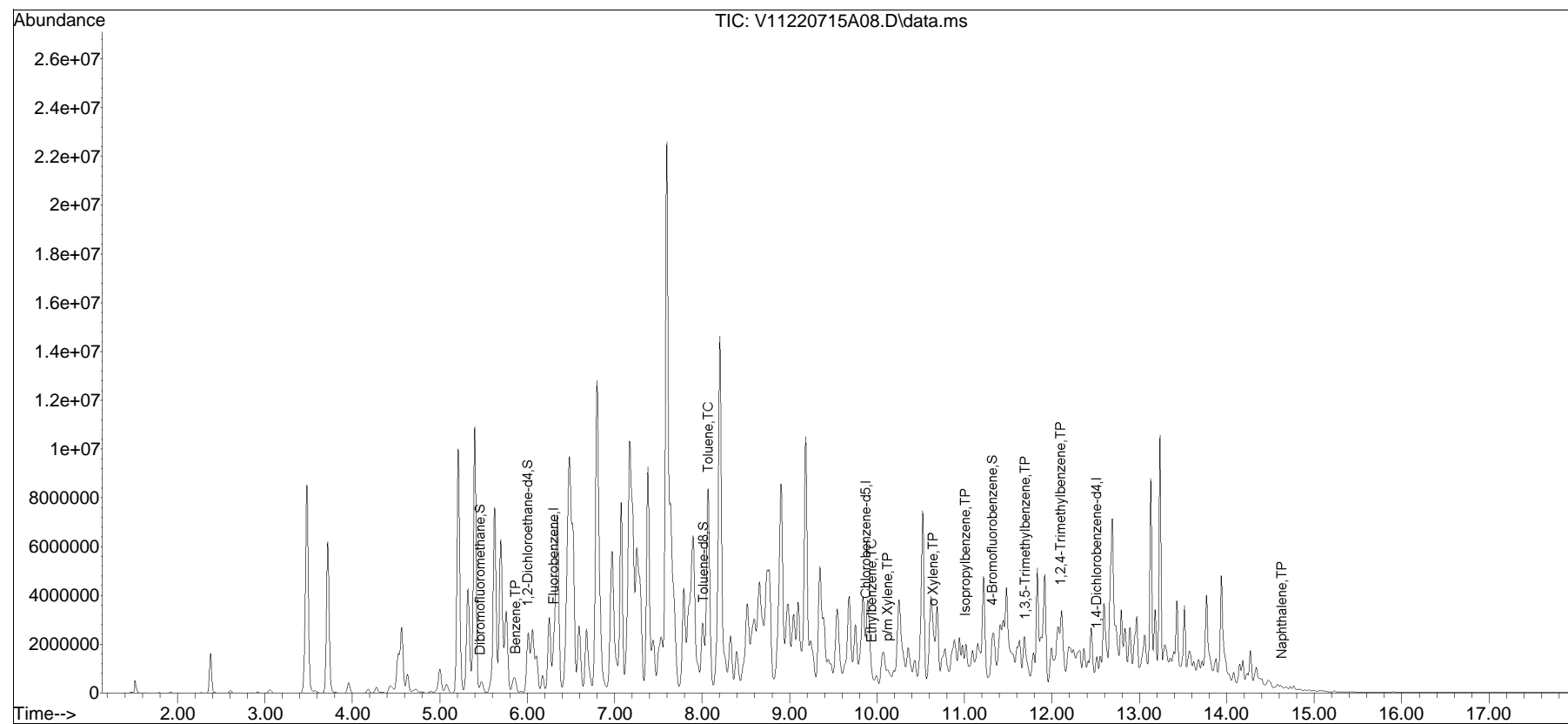


Quantitation Report (QT Reviewed)

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Data File : V11220715A08.D
Acq On : 15 Jul 2022 01:17 pm
Operator : VOA111:LAC
Sample : L2236779-18,31,5.90,5,,B,R2F
Misc : WG1663911,ICAL19072
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 16 17:26:42 2022
Quant Method : I:\VOLATILES\VOA111\2022\220715A\V111_220608A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V11220715A02.D•





ANALYTICAL REPORT

Lab Number:	L2236817
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/18/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236817

Report Date: 07/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236817-01	PB-843-03-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:00	07/11/22
L2236817-02	PB-843-04-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:20	07/11/22
L2236817-03	PB-843-05-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:50	07/11/22
L2236817-04	PB-843-10-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:00	07/11/22
L2236817-05	PB-843-11-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:10	07/11/22
L2236817-06	PB-843-12-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:20	07/11/22
L2236817-07	PB-843-13-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:35	07/11/22
L2236817-08	PB-843-17-SS01	SOIL	PHILADELPHIA, PA	07/11/22 13:00	07/11/22
L2236817-09	PB-843-14-SS01	SOIL	PHILADELPHIA, PA	07/11/22 13:10	07/11/22
L2236817-10	PB-843-01-SS01	SOIL	PHILADELPHIA, PA	07/11/22 13:20	07/11/22
L2236817-11	PB-843-08-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:00	07/11/22
L2236817-12	PB-843-02-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:15	07/11/22
L2236817-13	PB-843-06-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:25	07/11/22
L2236817-14	PB-843-07-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:35	07/11/22
L2236817-15	PB-843-15-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:50	07/11/22
L2236817-16	PB-843-09-SS01	SOIL	PHILADELPHIA, PA	07/11/22 15:00	07/11/22
L2236817-17	PB-843-16-SS01	SOIL	PHILADELPHIA, PA	07/11/22 15:20	07/11/22
L2236817-18	DUP-40	SOIL	PHILADELPHIA, PA	07/11/22 00:00	07/11/22
L2236817-19	FB-071122-3	WATER	PHILADELPHIA, PA	07/11/22 15:30	07/11/22
L2236817-20	FB-071122-4	WATER	PHILADELPHIA, PA	07/11/22 15:35	07/11/22
L2236817-21	TB-071122	WATER	PHILADELPHIA, PA	07/11/22 00:00	07/11/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Case Narrative (continued)

Report Submission

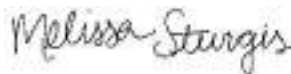
All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

L2236817-03, -17, and -18: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 07/18/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-01
 Client ID: PB-843-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 22:08
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00067	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00067	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00075	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-02
 Client ID: PB-843-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 22:34
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.00078		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-03
 Client ID: PB-843-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:00
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	0.0067		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.00012	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-04
 Client ID: PB-843-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:26
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0012	J	mg/kg	0.0021	0.00021	1
Benzene	0.082		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.0052		mg/kg	0.0021	0.00058	1
o-Xylene	0.0018		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0070		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00037	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	79		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-05
 Client ID: PB-843-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:52
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00045	J	mg/kg	0.0025	0.00025	1
Benzene	0.00024	J	mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.00026	J	mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	79		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	87		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-06
 Client ID: PB-843-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:18
 Analyst: JC
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00090	J	mg/kg	0.0020	0.00020	1
Benzene	0.0017		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00045	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	80		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-07
 Client ID: PB-843-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:44
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	82		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-08
 Client ID: PB-843-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 01:11
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00055	J	mg/kg	0.0023	0.00023	1
Benzene	0.00024	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	79		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-09
 Client ID: PB-843-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 01:37
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00060	J	mg/kg	0.0020	0.00020	1
Benzene	0.00035	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.00017	J	mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	77		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-10
 Client ID: PB-843-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 02:03
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-11
 Client ID: PB-843-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 02:29
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-12
 Client ID: PB-843-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:15
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 02:56
 Analyst: JC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00085		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	79		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-13
 Client ID: PB-843-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:25
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 03:22
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00037	J	mg/kg	0.0024	0.00024	1
Benzene	0.0057		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.00071	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	84		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-14
 Client ID: PB-843-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 05:07
 Analyst: JC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00047	J	mg/kg	0.0019	0.00019	1
Benzene	0.00032	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	0.0020		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.00071	J	mg/kg	0.00096	0.00014	1
p/m-Xylene	0.0034		mg/kg	0.0019	0.00054	1
o-Xylene	0.0015		mg/kg	0.00096	0.00028	1
Xylenes, Total	0.0049		mg/kg	0.00096	0.00028	1
Isopropylbenzene	0.00016	J	mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	0.0011	J	mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	0.0018	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	79		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-15
 Client ID: PB-843-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 03:48
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	76		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-16
 Client ID: PB-843-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 04:14
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	0.0018		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	ND		mg/kg	0.0012	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00070	1
o-Xylene	ND		mg/kg	0.0012	0.00037	1
Xylenes, Total	ND		mg/kg	0.0012	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	83		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-17
 Client ID: PB-843-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 04:40
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-18
 Client ID: DUP-40
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 11:00
 Analyst: LAC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-19
 Client ID: FB-071122-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 17:00
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-19
 Client ID: FB-071122-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 22:36
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	129		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-20
 Client ID: FB-071122-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 17:06
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-20
 Client ID: FB-071122-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 23:01
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	133	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-21
 Client ID: TB-071122
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 17:13
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-21
 Client ID: TB-071122
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 12:51
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	130		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/13/22 14:45
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-21 Batch: WG1662273-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/13/22 17:26
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1663309-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	119		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/14/22 20:49
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-17 Batch: WG1663407-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/15/22 09:04
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 21 Batch: WG1663987-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	119		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 08:41
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 18 Batch: WG1663990-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 19-21 Batch: WG1662273-2									
1,2-Dibromoethane	110		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1663309-3 WG1663309-4								
Methyl tert butyl ether	95		97		63-130	2		20
Benzene	98		100		70-130	2		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	95		96		70-130	1		20
Ethylbenzene	94		96		70-130	2		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		92		70-130	4		20
1,3,5-Trimethylbenzene	91		95		64-130	4		20
1,2,4-Trimethylbenzene	90		94		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		105		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	102		94		70-130
Dibromofluoromethane	102		104		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-17 Batch: WG1663407-3 WG1663407-4								
Methyl tert butyl ether	99		101		66-130	2		30
Benzene	93		93		70-130	0		30
1,2-Dichloroethane	70		71		70-130	1		30
Toluene	95		95		70-130	0		30
1,2-Dibromoethane	86		88		70-130	2		30
Ethylbenzene	92		91		70-130	1		30
p/m-Xylene	96		95		70-130	1		30
o-Xylene	93		93		70-130	0		30
Isopropylbenzene	99		100		70-130	1		30
1,3,5-Trimethylbenzene	92		97		70-130	5		30
1,2,4-Trimethylbenzene	92		94		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	74		75		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	79		79		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 21 Batch: WG1663987-3 WG1663987-4								
Methyl tert butyl ether	91		91		63-130	0		20
Benzene	100		100		70-130	0		20
1,2-Dichloroethane	98		100		70-130	2		20
Toluene	98		98		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	105		105		70-130	0		20
Isopropylbenzene	96		98		70-130	2		20
1,3,5-Trimethylbenzene	97		97		64-130	0		20
1,2,4-Trimethylbenzene	98		98		70-130	0		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	98		96		70-130
4-Bromofluorobenzene	91		92		70-130
Dibromofluoromethane	104		106		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 18 Batch: WG1663990-3 WG1663990-4								
Methyl tert butyl ether	94		100		66-130	6		30
Benzene	90		92		70-130	2		30
1,2-Dichloroethane	69	Q	70		70-130	1		30
Toluene	89		94		70-130	5		30
1,2-Dibromoethane	95		98		70-130	3		30
Ethylbenzene	86		91		70-130	6		30
p/m-Xylene	91		96		70-130	5		30
o-Xylene	91		96		70-130	5		30
Isopropylbenzene	86		91		70-130	6		30
1,3,5-Trimethylbenzene	85		91		70-130	7		30
1,2,4-Trimethylbenzene	86		92		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	78		77		70-130
Toluene-d8	98		101		70-130
4-Bromofluorobenzene	94		95		70-130
Dibromofluoromethane	90		90		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-01
 Client ID: PB-843-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 08:01
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	48		23-120
2-Fluorobiphenyl	23	Q	30-120
4-Terphenyl-d14	30		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-02
 Client ID: PB-843-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 08:25
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	29	Q	30-120
4-Terphenyl-d14	23		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-03
 Client ID: PB-843-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 06:28
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	29	Q	30-120
4-Terphenyl-d14	30		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-04
 Client ID: PB-843-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 11:33
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	33		30-120
4-Terphenyl-d14	32		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-05
 Client ID: PB-843-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 12:43
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-06
 Client ID: PB-843-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 08:48
 Analyst: SLR
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-07
 Client ID: PB-843-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 09:12
 Analyst: SLR
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.034	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	46		30-120
4-Terphenyl-d14	38		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-08
 Client ID: PB-843-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 11:56
 Analyst: SLR
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-09
 Client ID: PB-843-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 12:20
 Analyst: SLR
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-10
 Client ID: PB-843-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 15:23
 Analyst: CMM
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 07:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	65		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-11
 Client ID: PB-843-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 18:06
 Analyst: SLR
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	48		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-12
 Client ID: PB-843-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:15
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 05:41
 Analyst: SLR
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	63		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-13
 Client ID: PB-843-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:25
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 02:36
 Analyst: SZ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-14
 Client ID: PB-843-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 08:54
 Analyst: SZ
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.038	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.14		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.037	J	mg/kg	0.11	0.021	1
Chrysene	0.10	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.033	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-15
 Client ID: PB-843-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 06:56
 Analyst: SZ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.19		mg/kg	0.12	0.024	1
Anthracene	0.050	J	mg/kg	0.12	0.038	1
Pyrene	0.39		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.24		mg/kg	0.12	0.022	1
Chrysene	0.24		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.27		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.23		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	54		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-16
 Client ID: PB-843-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 02:12
 Analyst: SZ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	42		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-17
 Client ID: PB-843-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 02:59
 Analyst: SZ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-18
 Client ID: DUP-40
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 03:23
 Analyst: SZ
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.026	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.026	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.022	J	mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	51		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-19
 Client ID: FB-071122-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/13/22 12:54
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	43		15-120
4-Terphenyl-d14	44		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-20
 Client ID: FB-071122-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 13:38
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	28		23-120
2-Fluorobiphenyl	29		15-120
4-Terphenyl-d14	32	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D
 Analytical Date: 07/13/22 01:47
 Analyst: SLR

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-09,11-18 Batch: WG1661861-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	33		30-120
4-Terphenyl-d14	41		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D-SIM
 Analytical Date: 07/13/22 11:32
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1661883-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	0.02	J	ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	46		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/14/22 13:22
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 10 Batch: WG1662493-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	90		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-09,11-18 Batch: WG1661861-2 WG1661861-3								
Naphthalene	51		53		40-140	4		50
Fluorene	51		55		40-140	8		50
Phenanthrene	50		54		40-140	8		50
Anthracene	51		56		40-140	9		50
Pyrene	50		55		35-142	10		50
Benzo(a)anthracene	51		55		40-140	8		50
Chrysene	49		54		40-140	10		50
Benzo(b)fluoranthene	52		57		40-140	9		50
Benzo(a)pyrene	52		57		40-140	9		50
Benzo(ghi)perylene	49		55		40-140	12		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	51		52		23-120
2-Fluorobiphenyl	26	Q	26	Q	30-120
4-Terphenyl-d14	27		28		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1661883-2 WG1661883-3								
Naphthalene	50		123		40-140	84	Q	40
Fluorene	51		125		40-140	84	Q	40
Phenanthrene	50		123		40-140	84	Q	40
Anthracene	50		123		40-140	84	Q	40
Pyrene	51		129	Q	26-127	87	Q	40
Benzo(a)anthracene	48		123		40-140	88	Q	40
Chrysene	49		124		40-140	87	Q	40
Benzo(b)fluoranthene	52		138		40-140	91	Q	40
Benzo(a)pyrene	49		134		40-140	93	Q	40
Benzo(ghi)perylene	52		137		40-140	90	Q	40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	24		28		23-120
2-Fluorobiphenyl	25		30		15-120
4-Terphenyl-d14	26	Q	32	Q	41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 10 Batch: WG1662493-2 WG1662493-3								
Naphthalene	81		83		40-140	2		50
Fluorene	85		87		40-140	2		50
Phenanthrene	86		86		40-140	0		50
Anthracene	89		89		40-140	0		50
Pyrene	88		87		35-142	1		50
Benzo(a)anthracene	93		93		40-140	0		50
Chrysene	92		92		40-140	0		50
Benzo(b)fluoranthene	100		99		40-140	1		50
Benzo(a)pyrene	102		102		40-140	0		50
Benzo(ghi)perylene	90		92		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	87		89		23-120
2-Fluorobiphenyl	79		79		30-120
4-Terphenyl-d14	88		85		18-120



METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-01
 Client ID: PB-843-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.06		mg/kg	2.08	0.112	1	07/13/22 09:00	07/15/22 22:51	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-02
 Client ID: PB-843-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.63		mg/kg	2.26	0.121	1	07/13/22 09:00	07/15/22 21:42	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-03
 Client ID: PB-843-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.17		mg/kg	4.48	0.240	2	07/13/22 09:00	07/16/22 00:41	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-04
 Client ID: PB-843-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.30		mg/kg	2.21	0.118	1	07/13/22 09:00	07/15/22 21:52	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-05
 Client ID: PB-843-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.83		mg/kg	2.25	0.120	1	07/13/22 09:00	07/15/22 22:38	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-06
 Client ID: PB-843-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.48		mg/kg	2.15	0.115	1	07/13/22 09:00	07/15/22 22:42	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-07
 Client ID: PB-843-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.21		mg/kg	2.08	0.112	1	07/13/22 09:00	07/15/22 22:47	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-08

Date Collected: 07/11/22 13:00

Client ID: PB-843-17-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.0		mg/kg	2.38	0.128	1	07/13/22 09:00	07/15/22 23:27	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-09

Date Collected: 07/11/22 13:10

Client ID: PB-843-14-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.2		mg/kg	2.24	0.120	1	07/13/22 09:00	07/15/22 23:32	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-10
 Client ID: PB-843-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.02		mg/kg	2.08	0.112	1	07/13/22 09:00	07/15/22 23:36	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-11

Date Collected: 07/11/22 14:00

Client ID: PB-843-08-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.99		mg/kg	2.03	0.109	1	07/13/22 09:00	07/15/22 23:41	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-12

Date Collected: 07/11/22 14:15

Client ID: PB-843-02-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.41		mg/kg	2.18	0.117	1	07/13/22 09:00	07/15/22 23:46	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-13
 Client ID: PB-843-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:25
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.13		mg/kg	2.22	0.119	1	07/13/22 09:00	07/15/22 23:50	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-14
 Client ID: PB-843-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	14.2		mg/kg	2.21	0.118	1	07/13/22 09:00	07/15/22 23:55	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-15

Date Collected: 07/11/22 14:50

Client ID: PB-843-15-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	92.0		mg/kg	2.26	0.121	1	07/13/22 09:00	07/16/22 00:00	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-16

Date Collected: 07/11/22 15:00

Client ID: PB-843-09-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	18.3		mg/kg	2.32	0.125	1	07/13/22 09:00	07/16/22 00:04	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-17
 Client ID: PB-843-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	48.6		mg/kg	4.56	0.244	2	07/13/22 09:00	07/17/22 13:18	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-18
 Client ID: DUP-40
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	18.0		mg/kg	4.67	0.250	2	07/13/22 09:00	07/17/22 13:23	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-19

Date Collected: 07/11/22 15:30

Client ID: FB-071122-3

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 23:11	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-20

Date Collected: 07/11/22 15:35

Client ID: FB-071122-4

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 23:17	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1661768-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 21:46	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18 Batch: WG1661855-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/13/22 09:00	07/15/22 22:29	1,6010D	BV

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1661768-2								
Lead, Total	98		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-18 Batch: WG1661855-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-3 QC Sample: L2236831-01 Client ID: MS Sample												
Lead, Total	488.2	530	818.1	62	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1661855-3 QC Sample: L2236817-01 Client ID: PB-843-03-SS01												
Lead, Total	3.06	43.6	42.1	89		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236817

Report Date: 07/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-4 QC Sample: L2236831-01 Client ID: DUP Sample						
Lead, Total	488.2	359.8	ug/l	30	Q	20
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1661855-4 QC Sample: L2236817-01 Client ID: PB-843-03-SS01						
Lead, Total	3.06	3.18	mg/kg	4		20

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

**Lab Serial Dilution
Analysis
Batch Quality Control**

Lab Number: L2236817

Report Date: 07/18/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-6 QC Sample: L2236831-01 Client ID: DUP Sample						
Lead, Total	488.2	429.6	ug/l	12		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-01
Client ID: PB-843-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.8		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-02
Client ID: PB-843-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-03
 Client ID: PB-843-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-04

Date Collected: 07/11/22 11:00

Client ID: PB-843-10-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-05

Date Collected: 07/11/22 11:10

Client ID: PB-843-11-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-06
Client ID: PB-843-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.2		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-07

Date Collected: 07/11/22 11:35

Client ID: PB-843-13-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.2		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-08

Date Collected: 07/11/22 13:00

Client ID: PB-843-17-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-09

Date Collected: 07/11/22 13:10

Client ID: PB-843-14-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-10

Date Collected: 07/11/22 13:20

Client ID: PB-843-01-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.5		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-11

Date Collected: 07/11/22 14:00

Client ID: PB-843-08-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.7		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-12
Client ID: PB-843-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:15
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.4		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-13

Date Collected: 07/11/22 14:25

Client ID: PB-843-06-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.2		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-14
Client ID: PB-843-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:35
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.3		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-15
 Client ID: PB-843-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-16

Date Collected: 07/11/22 15:00

Client ID: PB-843-09-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-17

Date Collected: 07/11/22 15:20

Client ID: PB-843-16-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-18

Date Collected: 07/11/22 00:00

Client ID: DUP-40

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.3		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236817

Report Date: 07/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1661670-1 QC Sample: L2236817-01 Client ID: PB-843-03-SS01						
Solids, Total	93.8	93.7	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-01A	Vial MeOH preserved	C	NA		2.8	Y	Absent		PA-8260HLW(14)
L2236817-01B	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-01C	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-01D	Plastic 2oz unpreserved for TS	C	NA		2.8	Y	Absent		TS(7)
L2236817-01E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.8	Y	Absent		PB-TI(180)
L2236817-01F	Glass 120ml/4oz unpreserved	C	NA		2.8	Y	Absent		PA-PAH(14)
L2236817-02A	Vial MeOH preserved	C	NA		2.8	Y	Absent		PA-8260HLW(14)
L2236817-02B	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-02C	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-02D	Plastic 2oz unpreserved for TS	C	NA		2.8	Y	Absent		TS(7)
L2236817-02E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.8	Y	Absent		PB-TI(180)
L2236817-02F	Glass 120ml/4oz unpreserved	C	NA		2.8	Y	Absent		PA-PAH(14)
L2236817-03A	Vial MeOH preserved	C	NA		2.8	Y	Absent		PA-8260HLW(14)
L2236817-03B	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-03C	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-03D	Plastic 2oz unpreserved for TS	C	NA		2.8	Y	Absent		TS(7)
L2236817-03E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.8	Y	Absent		PB-TI(180)
L2236817-03F	Glass 120ml/4oz unpreserved	C	NA		2.8	Y	Absent		PA-PAH(14)
L2236817-04A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2236817-04B	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-04C	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-04D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2236817-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2236817-04F	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		PA-PAH(14)
L2236817-05A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2236817-05B	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-05C	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-05D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2236817-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2236817-05F	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		PA-PAH(14)
L2236817-06A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2236817-06B	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-06C	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-06D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2236817-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2236817-06F	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		PA-PAH(14)
L2236817-07A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2236817-07B	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-07C	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-07D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2236817-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2236817-07F	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		PA-PAH(14)
L2236817-08A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-08B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-08C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-08D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-08F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-09A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-09B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-09C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-09D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-09F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-10A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-10B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-10C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-10D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-10F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-11A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-11B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-11C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-11D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-11F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-12A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-12B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-12C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-12D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-12F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-13A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-13B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-13C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-13D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-13E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)

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Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-13F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-14A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-14B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-14C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-14D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-14E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-14F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-15A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-15B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-15C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-15D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-15E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-15F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-16A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-16B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-16C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-16D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-16E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-16F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-17A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-17B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-17C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-17D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-17E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-17F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-18A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-18B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-18C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)

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Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-18D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-18E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-18F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-19A	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-19B	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-19C	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-19D	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236817-19E	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236817-19F	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		PB-6020T-PPB(180)
L2236817-20A	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-20B	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-20C	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-20D	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236817-20E	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236817-20F	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		PB-6020T-PPB(180)
L2236817-21A	Vial HCl preserved	C	NA		2.8	Y	Absent		8011(14),PA-8260(14)
L2236817-21B	Vial HCl preserved	C	NA		2.8	Y	Absent		8011(14),PA-8260(14)

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 2 OF 3



Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/12/22

ALPHA Job #: L2236917

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program

Criteria

ANALYSIS

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
36917	11 PB-843-08-SS-01	7/11	1400	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	12 PB-843-02-SS-01	7/11	1415	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	13 PB-843-06-SS-01		1425	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	14 PB-843-07-SS-01		1435	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	15 PB-843-15-SS-01		1450	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	16 PB-843-09-SS-01		1500	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	17 PB-843-16-SS-01		1520	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	18 Dup - 40		-	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	19 FB-071122-3		1530	W	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	20 FB-071122-4		1535	W	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SHORTLIST 1-5

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Lab to do
 Preservation
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type

Preservative

Relinquished By:

Date/Time

Received By:

Date/Time

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

PADEP Short List Analytical Suites per Table III-5:

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
 2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
 3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
 4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
 5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
-



ANALYTICAL REPORT

Lab Number:	L2236962
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/19/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236962

Report Date: 07/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236962-01	PB-881-01-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:00	07/12/22
L2236962-02	PB-881-02-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:10	07/12/22
L2236962-03	PB-881-03-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:20	07/12/22
L2236962-04	PB-881-04-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:30	07/12/22
L2236962-05	PB-881-05-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:40	07/12/22
L2236962-06	PB-881-06-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:50	07/12/22
L2236962-07	PB-881-07-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:00	07/12/22
L2236962-08	PB-881-08-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:10	07/12/22
L2236962-09	PB-881-09-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:20	07/12/22
L2236962-10	PB-881-10-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:30	07/12/22
L2236962-11	PB-881-11-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:40	07/12/22
L2236962-12	PB-881-12-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:50	07/12/22
L2236962-13	PB-881-13-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:00	07/12/22
L2236962-14	PB-881-14-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:10	07/12/22
L2236962-15	PB-881-15-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:20	07/12/22
L2236962-16	PB-881-16-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:30	07/12/22
L2236962-17	PB-881-17-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:40	07/12/22
L2236962-18	PB-881-18-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:50	07/12/22
L2236962-19	FB-071222-1	WATER	PHILADELPHIA, PA	07/12/22 14:00	07/12/22
L2236962-20	FB-071222-2	WATER	PHILADELPHIA, PA	07/12/22 14:10	07/12/22
L2236962-21	DUP-41	SOIL	PHILADELPHIA, PA	07/12/22 00:00	07/12/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2236962-01: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (43%) and the surrogate recovery for 4-bromofluorobenzene (3132%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis; however, since the IS response was below method criteria, all associated compounds are considered to have a potentially high bias. The results of both analyses are reported.

L2236962-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (507%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236962-07: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

L2236962-10: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (164%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236962-21: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

L2236962-21: The sample was received in the appropriate containers (vials) for the Volatile Organics by EPA Method 5035/8260 analysis; however, they could not be used for analysis. With the client's authorization, a sample aliquot was taken from an unpreserved container (inappropriate plastic) and preserved appropriately.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Case Narrative (continued)

L2236962-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (786%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2236962-01D and -10D: The sample has elevated detection limits due to the dilution required by the sample matrix.

Total Metals

L2236962-03, -04, -11, -13, -14, and -16: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis. The WG1662480-3 MS recoveries, performed on L2236962-01, are outside the acceptance criteria for lead (51%). A post digestion spike was performed and yielded unacceptable recoveries for lead (50%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Steven Gniadek

Title: Technical Director/Representative

Date: 07/19/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01
 Client ID: PB-881-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 20:40
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.063	0.016	1
Toluene	ND		mg/kg	0.063	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.018	1
Ethylbenzene	ND		mg/kg	0.063	0.0089	1
p/m-Xylene	ND		mg/kg	0.13	0.035	1
o-Xylene	ND		mg/kg	0.063	0.018	1
Xylenes, Total	ND		mg/kg	0.063	0.018	1
Isopropylbenzene	ND		mg/kg	0.063	0.0069	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01
 Client ID: PB-881-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 11:45
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	0.044		mg/kg	0.0017	0.00048	1
o-Xylene	0.011		mg/kg	0.00087	0.00025	1
Xylenes, Total	0.055		mg/kg	0.00087	0.00025	1
Isopropylbenzene	0.0032		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	0.091		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	0.72	E	mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	3130	Q	70-130
Dibromofluoromethane	108		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-02
 Client ID: PB-881-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 09:42
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-03
 Client ID: PB-881-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:10
 Analyst: MKS
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-04
 Client ID: PB-881-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:38
 Analyst: MKS
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00021	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	98		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-05
 Client ID: PB-881-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 11:07
 Analyst: MKS
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0012	J	mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-06
 Client ID: PB-881-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 11:36
 Analyst: MKS
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-07
 Client ID: PB-881-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 21:10
 Analyst: NLK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.084	0.0085	1
Benzene	ND		mg/kg	0.021	0.0070	1
1,2-Dichloroethane	ND		mg/kg	0.042	0.011	1
Toluene	ND		mg/kg	0.042	0.023	1
1,2-Dibromoethane	ND		mg/kg	0.021	0.012	1
Ethylbenzene	ND		mg/kg	0.042	0.0060	1
p/m-Xylene	0.038	J	mg/kg	0.084	0.024	1
o-Xylene	ND		mg/kg	0.042	0.012	1
Xylenes, Total	0.038	J	mg/kg	0.042	0.012	1
Isopropylbenzene	0.0089	J	mg/kg	0.042	0.0046	1
1,3,5-Trimethylbenzene	0.22		mg/kg	0.084	0.0081	1
1,2,4-Trimethylbenzene	0.47		mg/kg	0.084	0.014	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-07
 Client ID: PB-881-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 12:12
 Analyst: NLK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0015	0.00016	1
Benzene	ND		mg/kg	0.00038	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00077	0.00020	1
Toluene	ND		mg/kg	0.00077	0.00042	1
1,2-Dibromoethane	ND		mg/kg	0.00038	0.00023	1
Ethylbenzene	0.0033		mg/kg	0.00077	0.00011	1
p/m-Xylene	0.16		mg/kg	0.0015	0.00043	1
o-Xylene	0.0042		mg/kg	0.00077	0.00022	1
Xylenes, Total	0.16		mg/kg	0.00077	0.00022	1
Isopropylbenzene	0.042		mg/kg	0.00077	0.00008	1
1,3,5-Trimethylbenzene	1.1	E	mg/kg	0.0015	0.00015	1
1,2,4-Trimethylbenzene	2.1	E	mg/kg	0.0015	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	507	Q	70-130
Dibromofluoromethane	107		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-08
 Client ID: PB-881-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 12:04
 Analyst: MKS
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-09
 Client ID: PB-881-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 12:32
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00024	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-10
 Client ID: PB-881-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 17:42
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.21	0.021	1
Benzene	ND		mg/kg	0.052	0.017	1
1,2-Dichloroethane	ND		mg/kg	0.10	0.027	1
Toluene	ND		mg/kg	0.10	0.057	1
1,2-Dibromoethane	ND		mg/kg	0.052	0.031	1
Ethylbenzene	0.067	J	mg/kg	0.10	0.015	1
p/m-Xylene	0.37		mg/kg	0.21	0.059	1
o-Xylene	0.086	J	mg/kg	0.10	0.030	1
Xylenes, Total	0.46	J	mg/kg	0.10	0.030	1
Isopropylbenzene	0.26		mg/kg	0.10	0.011	1
1,3,5-Trimethylbenzene	3.6		mg/kg	0.21	0.020	1
1,2,4-Trimethylbenzene	9.4		mg/kg	0.21	0.035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	164	Q	70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-11
 Client ID: PB-881-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:00
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-12
 Client ID: PB-881-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:28
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-13
 Client ID: PB-881-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:56
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-14
 Client ID: PB-881-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 14:24
 Analyst: MKS
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-15
 Client ID: PB-881-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 16:18
 Analyst: MKS
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00054	J	mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00024	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-16
 Client ID: PB-881-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 14:52
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00017	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-17
 Client ID: PB-881-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:21
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-18
 Client ID: PB-881-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:49
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-19
 Client ID: FB-071222-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 12:18
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-19
 Client ID: FB-071222-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:07
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-20
 Client ID: FB-071222-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 12:25
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-20
 Client ID: FB-071222-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:30
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-21
 Client ID: DUP-41
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 18:11
 Analyst: MKS
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	ND		mg/kg	0.065	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	ND		mg/kg	0.065	0.0092	1
p/m-Xylene	0.037	J	mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.065	0.019	1
Xylenes, Total	0.037	J	mg/kg	0.065	0.019	1
Isopropylbenzene	0.012	J	mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	0.45		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	1.0		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-21
 Client ID: DUP-41
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 12:39
 Analyst: NLK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00026	1
Toluene	0.0018		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	0.0017		mg/kg	0.00099	0.00014	1
p/m-Xylene	0.024		mg/kg	0.0020	0.00056	1
o-Xylene	0.0026		mg/kg	0.00099	0.00029	1
Xylenes, Total	0.027		mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.028		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	1.3	E	mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.84	E	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	786	Q	70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 10:38
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-20 Batch: WG1662837-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:14
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02-06,08-09,11-18 Batch: WG1664129-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:14
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 10,21 Batch: WG1664132-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:44
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1664179-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/18/22 13:35
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,07 Batch: WG1664660-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/19/22 11:18
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,07,21 Batch: WG1664816-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	75		70-130
Dibromofluoromethane	105		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236962

Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 19-20 Batch: WG1662837-2									
1,2-Dibromoethane	102		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02-06,08-09,11-18 Batch: WG1664129-3 WG1664129-4								
Methyl tert butyl ether	115		114		66-130	1		30
Benzene	103		102		70-130	1		30
1,2-Dichloroethane	97		96		70-130	1		30
Toluene	103		102		70-130	1		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	100		99		70-130	1		30
p/m-Xylene	100		99		70-130	1		30
o-Xylene	101		100		70-130	1		30
Isopropylbenzene	100		99		70-130	1		30
1,3,5-Trimethylbenzene	98		97		70-130	1		30
1,2,4-Trimethylbenzene	101		100		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	92		93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 10,21 Batch: WG1664132-3 WG1664132-4								
Methyl tert butyl ether	115		114		66-130	1		30
Benzene	103		102		70-130	1		30
1,2-Dichloroethane	97		96		70-130	1		30
Toluene	103		102		70-130	1		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	100		99		70-130	1		30
p/m-Xylene	100		99		70-130	1		30
o-Xylene	101		100		70-130	1		30
Isopropylbenzene	100		99		70-130	1		30
1,3,5-Trimethylbenzene	98		97		70-130	1		30
1,2,4-Trimethylbenzene	101		100		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	92		93		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1664179-3 WG1664179-4								
Methyl tert butyl ether	94		96		63-130	2		20
Benzene	94		95		70-130	1		20
1,2-Dichloroethane	93		94		70-130	1		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	110		120		70-130	9		20
1,3,5-Trimethylbenzene	100		110		64-130	10		20
1,2,4-Trimethylbenzene	100		110		70-130	10		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		95		70-130
Toluene-d8	110		109		70-130
4-Bromofluorobenzene	121		123		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,07 Batch: WG1664660-3 WG1664660-4								
Methyl tert butyl ether	115		118		66-130	3		30
Benzene	108		108		70-130	0		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	108		109		70-130	1		30
1,2-Dibromoethane	106		110		70-130	4		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	107		108		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	111		110		70-130	1		30
1,3,5-Trimethylbenzene	107		107		70-130	0		30
1,2,4-Trimethylbenzene	107		108		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	91		92		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,07,21 Batch: WG1664816-3 WG1664816-4								
Methyl tert butyl ether	92		91		66-130	1		30
Benzene	96		94		70-130	2		30
1,2-Dichloroethane	90		89		70-130	1		30
Toluene	95		96		70-130	1		30
1,2-Dibromoethane	98		99		70-130	1		30
Ethylbenzene	94		96		70-130	2		30
p/m-Xylene	100		101		70-130	1		30
o-Xylene	96		97		70-130	1		30
Isopropylbenzene	92		92		70-130	0		30
1,3,5-Trimethylbenzene	92		91		70-130	1		30
1,2,4-Trimethylbenzene	89		89		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		97		70-130
Toluene-d8	98		101		70-130
4-Bromofluorobenzene	83		82		70-130
Dibromofluoromethane	106		105		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01 D
 Client ID: PB-881-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/19/22 15:12
 Analyst: JG
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.26	J	mg/kg	0.88	0.11	5
Fluorene	0.19	J	mg/kg	0.88	0.085	5
Phenanthrene	0.16	J	mg/kg	0.52	0.11	5
Anthracene	ND		mg/kg	0.52	0.17	5
Pyrene	0.15	J	mg/kg	0.52	0.087	5
Benzo(a)anthracene	ND		mg/kg	0.52	0.099	5
Chrysene	0.22	J	mg/kg	0.52	0.091	5
Benzo(b)fluoranthene	ND		mg/kg	0.52	0.15	5
Benzo(a)pyrene	ND		mg/kg	0.70	0.21	5
Benzo(ghi)perylene	ND		mg/kg	0.70	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	51		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	66		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-02
 Client ID: PB-881-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 17:07
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-03
 Client ID: PB-881-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 17:31
 Analyst: EK
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.2		mg/kg	0.17	0.021	1
Fluorene	0.51		mg/kg	0.17	0.017	1
Phenanthrene	1.0		mg/kg	0.10	0.021	1
Anthracene	0.097	J	mg/kg	0.10	0.033	1
Pyrene	0.15		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.040	J	mg/kg	0.10	0.019	1
Chrysene	0.20		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	95		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-04
 Client ID: PB-881-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 17:55
 Analyst: EK
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.048	J	mg/kg	0.19	0.023	1
Fluorene	0.018	J	mg/kg	0.19	0.018	1
Phenanthrene	0.21		mg/kg	0.11	0.023	1
Anthracene	0.047	J	mg/kg	0.11	0.037	1
Pyrene	0.28		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.23		mg/kg	0.11	0.021	1
Chrysene	0.22		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.29		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.25		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.14	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	72		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-05
 Client ID: PB-881-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 18:19
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-06
 Client ID: PB-881-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 18:43
 Analyst: EK
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	74		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-07
 Client ID: PB-881-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 19:07
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.048	J	mg/kg	0.17	0.020	1
Fluorene	0.23		mg/kg	0.17	0.016	1
Phenanthrene	0.48		mg/kg	0.10	0.020	1
Anthracene	0.040	J	mg/kg	0.10	0.033	1
Pyrene	0.064	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.022	J	mg/kg	0.10	0.019	1
Chrysene	0.087	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-08
 Client ID: PB-881-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 19:32
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-09
 Client ID: PB-881-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 19:56
 Analyst: EK
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-10 D
 Client ID: PB-881-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/19/22 15:36
 Analyst: JG
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	4.4		mg/kg	0.86	0.10	5
Fluorene	1.1		mg/kg	0.86	0.083	5
Phenanthrene	1.9		mg/kg	0.51	0.10	5
Anthracene	ND		mg/kg	0.51	0.17	5
Pyrene	0.23	J	mg/kg	0.51	0.085	5
Benzo(a)anthracene	0.17	J	mg/kg	0.51	0.097	5
Chrysene	0.34	J	mg/kg	0.51	0.089	5
Benzo(b)fluoranthene	ND		mg/kg	0.51	0.14	5
Benzo(a)pyrene	ND		mg/kg	0.69	0.21	5
Benzo(ghi)perylene	ND		mg/kg	0.69	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-11
 Client ID: PB-881-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 20:44
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-12
 Client ID: PB-881-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:08
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-13
 Client ID: PB-881-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:32
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-14
 Client ID: PB-881-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:56
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-15
 Client ID: PB-881-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 22:20
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-16
 Client ID: PB-881-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 22:44
 Analyst: EK
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	83		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-17
 Client ID: PB-881-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:08
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	92		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-18
 Client ID: PB-881-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:32
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	84		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-19
 Client ID: FB-071222-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 15:31
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	30		23-120
2-Fluorobiphenyl	31		15-120
4-Terphenyl-d14	34	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-20
 Client ID: FB-071222-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 15:47
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	30		23-120
2-Fluorobiphenyl	31		15-120
4-Terphenyl-d14	31	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-21
 Client ID: DUP-41
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:56
 Analyst: EK
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.60		mg/kg	0.18	0.022	1
Fluorene	0.41		mg/kg	0.18	0.017	1
Phenanthrene	0.88		mg/kg	0.11	0.022	1
Anthracene	0.063	J	mg/kg	0.11	0.035	1
Pyrene	0.10	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.031	J	mg/kg	0.11	0.020	1
Chrysene	0.15		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/14/22 13:22
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-18,21 Batch: WG1662493-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	90		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/15/22 15:15
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1662556-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	31		23-120
2-Fluorobiphenyl	32		15-120
4-Terphenyl-d14	34	Q	41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-18,21 Batch: WG1662493-2 WG1662493-3								
Naphthalene	81		83		40-140	2		50
Fluorene	85		87		40-140	2		50
Phenanthrene	86		86		40-140	0		50
Anthracene	89		89		40-140	0		50
Pyrene	88		87		35-142	1		50
Benzo(a)anthracene	93		93		40-140	0		50
Chrysene	92		92		40-140	0		50
Benzo(b)fluoranthene	100		99		40-140	1		50
Benzo(a)pyrene	102		102		40-140	0		50
Benzo(ghi)perylene	90		92		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	87		89		23-120
2-Fluorobiphenyl	79		79		30-120
4-Terphenyl-d14	88		85		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1662556-2 WG1662556-3								
Naphthalene	57		57		40-140	0		40
Fluorene	58		62		40-140	7		40
Phenanthrene	57		61		40-140	7		40
Anthracene	57		61		40-140	7		40
Pyrene	61		64		26-127	5		40
Benzo(a)anthracene	59		62		40-140	5		40
Chrysene	57		63		40-140	10		40
Benzo(b)fluoranthene	60		70		40-140	15		40
Benzo(a)pyrene	61		65		40-140	6		40
Benzo(ghi)perylene	58		61		40-140	5		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	27		29		23-120
2-Fluorobiphenyl	29		30		15-120
4-Terphenyl-d14	30	Q	33	Q	41-149



METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01
 Client ID: PB-881-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.62	J	mg/kg	2.00	0.107	1	07/13/22 21:00	07/18/22 12:16	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-02
 Client ID: PB-881-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.49	J	mg/kg	2.04	0.109	1	07/13/22 21:00	07/18/22 12:49	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-03

Date Collected: 07/12/22 10:20

Client ID: PB-881-03-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.78	J	mg/kg	4.15	0.223	2	07/13/22 21:00	07/18/22 13:45	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-04
 Client ID: PB-881-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	89.2		mg/kg	22.8	1.22	10	07/13/22 21:00	07/18/22 14:27	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-05
 Client ID: PB-881-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.70		mg/kg	2.20	0.118	1	07/13/22 21:00	07/18/22 13:03	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-06
 Client ID: PB-881-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.45	J	mg/kg	2.02	0.108	1	07/13/22 21:00	07/18/22 13:08	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-07
 Client ID: PB-881-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.48	J	mg/kg	1.98	0.106	1	07/13/22 21:00	07/18/22 13:12	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-08
 Client ID: PB-881-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.67		mg/kg	2.43	0.130	1	07/13/22 21:00	07/18/22 13:17	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-09
 Client ID: PB-881-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.12		mg/kg	2.29	0.123	1	07/13/22 21:00	07/18/22 13:22	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-10

Date Collected: 07/12/22 11:30

Client ID: PB-881-10-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.22	J	mg/kg	2.04	0.109	1	07/13/22 21:00	07/18/22 13:26	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-11
 Client ID: PB-881-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.35	J	mg/kg	4.14	0.222	2	07/13/22 21:00	07/18/22 13:55	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-12

Date Collected: 07/12/22 11:50

Client ID: PB-881-12-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.40	J	mg/kg	2.06	0.110	1	07/13/22 21:00	07/18/22 13:59	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-13
 Client ID: PB-881-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.20	J	mg/kg	4.20	0.225	2	07/13/22 21:00	07/18/22 14:55	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-14

Date Collected: 07/12/22 12:10

Client ID: PB-881-14-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.02	J	mg/kg	3.98	0.214	2	07/13/22 21:00	07/18/22 15:00	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-15
 Client ID: PB-881-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.85		mg/kg	2.36	0.126	1	07/13/22 21:00	07/18/22 14:14	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-16
 Client ID: PB-881-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	10.7		mg/kg	4.80	0.257	2	07/13/22 21:00	07/18/22 15:05	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-17

Date Collected: 07/12/22 12:40

Client ID: PB-881-17-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.40	J	mg/kg	2.05	0.110	1	07/13/22 21:00	07/18/22 14:23	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-18
 Client ID: PB-881-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.46	J	mg/kg	2.05	0.110	1	07/13/22 21:00	07/18/22 14:41	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-19

Date Collected: 07/12/22 14:00

Client ID: FB-071222-1

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 15:49	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-20

Date Collected: 07/12/22 14:10

Client ID: FB-071222-2

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 15:58	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-21
 Client ID: DUP-41
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.48	J	mg/kg	2.05	0.110	1	07/13/22 21:00	07/18/22 14:46	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1662468-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 14:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18,21 Batch: WG1662480-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/13/22 21:00	07/18/22 11:53	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1662468-2								
Lead, Total	103		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 Batch: WG1662480-2 SRM Lot Number: D113-540								
Lead, Total	76		-		72-128	-		



Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1662468-3 QC Sample: L2236962-19 Client ID: FB-071222-1												
Lead, Total	ND	530	530.0	100		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 QC Batch ID: WG1662480-3 QC Sample: L2236962-01 Client ID: PB-881-01-SS01												
Lead, Total	1.62J	43.9	22.6	51	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236962

Report Date: 07/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1662468-4 QC Sample: L2236962-19 Client ID: FB-071222-1						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 QC Batch ID: WG1662480-4 QC Sample: L2236962-01 Client ID: PB-881-01-SS01						
Lead, Total	1.62J	1.66J	mg/kg	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01
 Client ID: PB-881-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.9		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-02
Client ID: PB-881-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
Date Received: 07/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.9		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-03

Date Collected: 07/12/22 10:20

Client ID: PB-881-03-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.2		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-04
 Client ID: PB-881-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.0		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-05

Date Collected: 07/12/22 10:40

Client ID: PB-881-05-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.8		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-06

Date Collected: 07/12/22 10:50

Client ID: PB-881-06-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.8		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-07

Date Collected: 07/12/22 11:00

Client ID: PB-881-07-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.4		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-08

Date Collected: 07/12/22 11:10

Client ID: PB-881-08-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.6		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-09

Date Collected: 07/12/22 11:20

Client ID: PB-881-09-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-10

Date Collected: 07/12/22 11:30

Client ID: PB-881-10-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.1		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-11
Client ID: PB-881-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:40
Date Received: 07/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-12
 Client ID: PB-881-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-13

Date Collected: 07/12/22 12:00

Client ID: PB-881-13-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.2		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-14

Date Collected: 07/12/22 12:10

Client ID: PB-881-14-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.1		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-15

Date Collected: 07/12/22 12:20

Client ID: PB-881-15-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.4		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-16

Date Collected: 07/12/22 12:30

Client ID: PB-881-16-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.9		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-17
Client ID: PB-881-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:40
Date Received: 07/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.7		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-18

Date Collected: 07/12/22 12:50

Client ID: PB-881-18-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-21

Date Collected: 07/12/22 00:00

Client ID: DUP-41

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.0		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236962

Report Date: 07/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18,21 QC Batch ID: WG1662302-1 QC Sample: L2236962-01 Client ID: PB-881-01-SS01						
Solids, Total	94.9	94.5	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-01A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236962-01B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-01C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-01D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-01F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-02A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-02B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-02C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-02D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-02F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-03A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-03B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-03C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-03D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-03F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-04A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-04B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-04C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-04D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-04F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-05A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-05B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-05C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-05D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-05F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-06A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-06B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-06C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-06D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-06F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-07A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236962-07B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-07C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-07D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-07F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-08A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-08B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-08C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-08D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-08F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-09A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-09B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-09C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-09D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-09F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-10A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-10B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-10C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-10D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-10F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-11A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-11B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-11C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-11D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-11F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-12A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-12B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-12C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-12D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-12F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-13A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-13B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-13C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-13D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-13F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-14A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-14B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-14C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-14D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-14F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-15A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-15B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-15C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-15D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-15F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-16A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-16B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-16C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-16D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-16E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-16F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-17A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-17B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-17C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-17D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-17E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-17F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-18A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-18B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-18C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-18D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Serial_No:07192217:12
Lab Number: L2236962
Report Date: 07/19/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-18E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-18F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-19A	Vial HCl preserved	B	NA		3.8	Y	Absent		PA-8260(14)
L2236962-19B	Vial HCl preserved	B	NA		3.8	Y	Absent		PA-8260(14)
L2236962-19C	Vial HCl preserved	B	NA		3.8	Y	Absent		8011(14)
L2236962-19D	Plastic 250ml HNO3 preserved	B	<2	<2	3.8	Y	Absent		PB-6020T-PPB(180)
L2236962-19E	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		PA-PAHSIM-LVI(7)
L2236962-19F	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		PA-PAHSIM-LVI(7)
L2236962-20A	Vial HCl preserved	B	NA		3.8	Y	Absent		PA-8260(14)
L2236962-20B	Vial HCl preserved	B	NA		3.8	Y	Absent		PA-8260(14)
L2236962-20C	Vial HCl preserved	B	NA		3.8	Y	Absent		8011(14)
L2236962-20D	Plastic 250ml HNO3 preserved	B	<2	<2	3.8	Y	Absent		PB-6020T-PPB(180)
L2236962-20E	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		PA-PAHSIM-LVI(7)
L2236962-20F	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		PA-PAHSIM-LVI(7)
L2236962-21A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236962-21B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-21C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-21D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-21E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-21F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

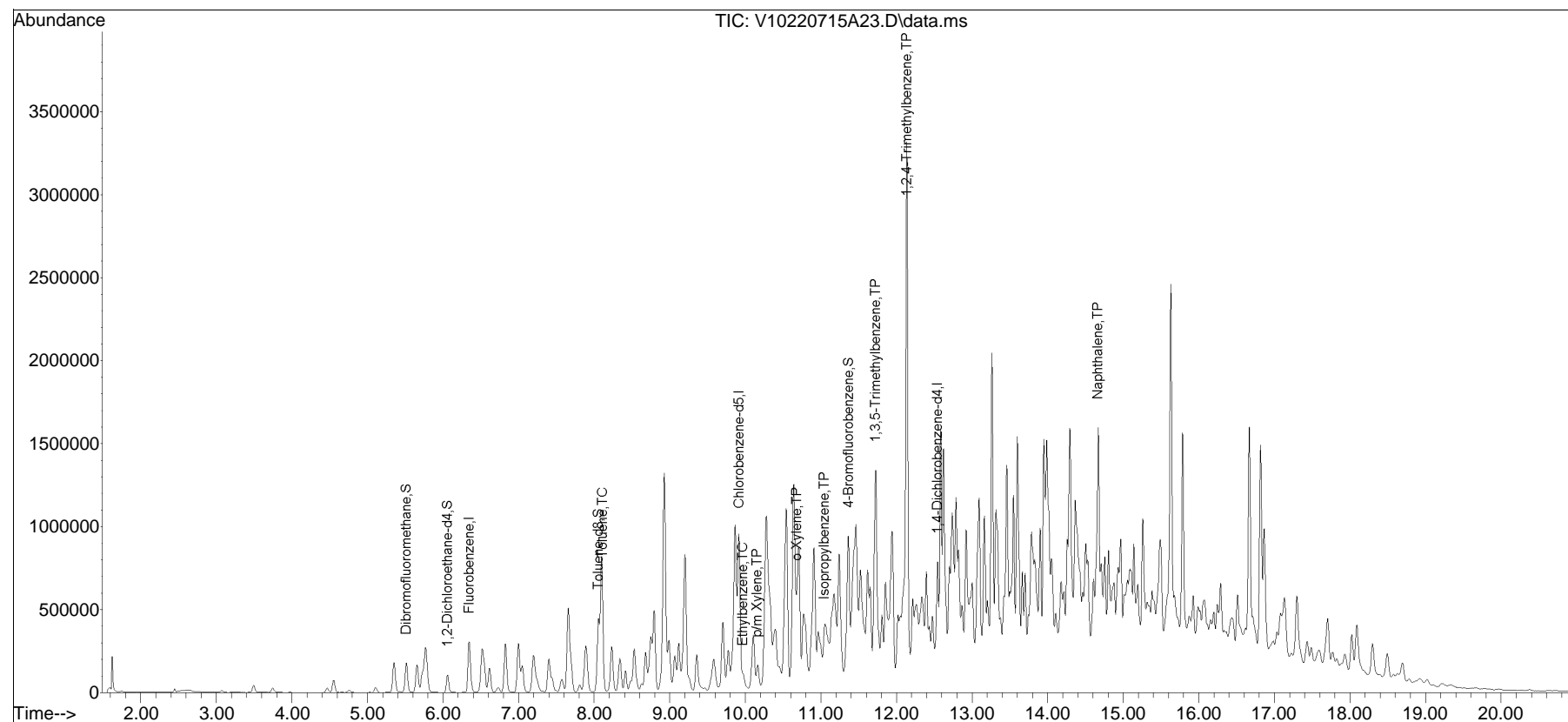
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220715A\
Data File : V10220715A23.D
Acq On : 15 Jul 2022 5:42 pm
Operator : VOA110:MKS
Sample : 12236962-10,31h,2.57,5,0.100,,a,r2f
Misc : WG1664132,ICAL18890
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Jul 16 16:58:01 2022
Quant Method : I:\VOLATILES\VOA110\2022\220715A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V10220715A01.D•





ANALYTICAL REPORT

Lab Number:	L2236966
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/19/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236966-01	PB-841-01-SS01	SOIL	PHILADELPHIA, PA	07/12/22 09:30	07/12/22
L2236966-02	PB-841-02-SS01	SOIL	PHILADELPHIA, PA	07/12/22 09:50	07/12/22
L2236966-03	PB-841-03-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:10	07/12/22
L2236966-04	PB-841-04-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:30	07/12/22
L2236966-05	PB-841-05-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:50	07/12/22
L2236966-06	PB-841-06-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:10	07/12/22
L2236966-07	PB-841-07-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:30	07/12/22
L2236966-08	PB-841-08-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:50	07/12/22
L2236966-09	PB-841-09-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:10	07/12/22
L2236966-10	PB-841-10-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:30	07/12/22
L2236966-11	PB-841-11-SS01	SOIL	PHILADELPHIA, PA	07/12/22 13:30	07/12/22
L2236966-12	PB-841-12-SS01	SOIL	PHILADELPHIA, PA	07/12/22 13:40	07/12/22
L2236966-13	PB-841-13-SS01	SOIL	PHILADELPHIA, PA	07/12/22 13:55	07/12/22
L2236966-14	PB-841-14-SS01	SOIL	PHILADELPHIA, PA	07/12/22 14:30	07/12/22
L2236966-15	DUP-42	SOIL	PHILADELPHIA, PA	07/12/22 00:00	07/12/22
L2236966-16	FB-220712-3	WATER	PHILADELPHIA, PA	07/12/22 14:35	07/12/22
L2236966-17	TB-220712	WATER	PHILADELPHIA, PA	07/12/22 00:00	07/12/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2236966-17: Headspace was noted in the sample containers submitted for EDB & DBCP -Method 8011. The analysis was performed.

Microextractables

L2236966-17: Headspace was noted in the sample container utilized for analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/19/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-01
 Client ID: PB-841-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 09:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 18:39
 Analyst: MKS
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-02
 Client ID: PB-841-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 09:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 16:48
 Analyst: LAC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-03
 Client ID: PB-841-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 17:15
 Analyst: LAC
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-04
 Client ID: PB-841-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 17:42
 Analyst: LAC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00039	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00078	0.00020	1
Toluene	ND		mg/kg	0.00078	0.00042	1
1,2-Dibromoethane	ND		mg/kg	0.00039	0.00023	1
Ethylbenzene	ND		mg/kg	0.00078	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00044	1
o-Xylene	ND		mg/kg	0.00078	0.00023	1
Xylenes, Total	ND		mg/kg	0.00078	0.00023	1
Isopropylbenzene	ND		mg/kg	0.00078	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-05
 Client ID: PB-841-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 18:09
 Analyst: LAC
 Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	107		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-06
 Client ID: PB-841-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 18:36
 Analyst: LAC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-07
 Client ID: PB-841-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 19:02
 Analyst: LAC
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00087	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00045	1
Toluene	ND		mg/kg	0.0017	0.00095	1
1,2-Dibromoethane	ND		mg/kg	0.00087	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00025	1
p/m-Xylene	ND		mg/kg	0.0035	0.00098	1
o-Xylene	ND		mg/kg	0.0017	0.00051	1
Xylenes, Total	ND		mg/kg	0.0017	0.00051	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	85		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-08
 Client ID: PB-841-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 19:28
 Analyst: LAC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00065	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00065	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00073	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	105		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-09
 Client ID: PB-841-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 19:54
 Analyst: LAC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0055	0.00055	1
Benzene	ND		mg/kg	0.0014	0.00045	1
1,2-Dichloroethane	ND		mg/kg	0.0027	0.00070	1
Toluene	ND		mg/kg	0.0027	0.0015	1
1,2-Dibromoethane	ND		mg/kg	0.0014	0.00080	1
Ethylbenzene	ND		mg/kg	0.0027	0.00039	1
p/m-Xylene	ND		mg/kg	0.0055	0.0015	1
o-Xylene	ND		mg/kg	0.0027	0.00080	1
Xylenes, Total	ND		mg/kg	0.0027	0.00080	1
Isopropylbenzene	ND		mg/kg	0.0027	0.00030	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0055	0.00053	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0055	0.00091	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-10
 Client ID: PB-841-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 20:21
 Analyst: LAC
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	85		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-11
 Client ID: PB-841-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 20:47
 Analyst: LAC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00069	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	ND		mg/kg	0.0014	0.00075	1
1,2-Dibromoethane	ND		mg/kg	0.00069	0.00040	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0028	0.00077	1
o-Xylene	ND		mg/kg	0.0014	0.00040	1
Xylenes, Total	ND		mg/kg	0.0014	0.00040	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	108		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-12
 Client ID: PB-841-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 21:41
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00020	J	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-13
 Client ID: PB-841-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:55
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 16:50
 Analyst: NLK
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00086	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	ND		mg/kg	0.0017	0.00094	1
1,2-Dibromoethane	ND		mg/kg	0.00086	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0035	0.00097	1
o-Xylene	ND		mg/kg	0.0017	0.00050	1
Xylenes, Total	ND		mg/kg	0.0017	0.00050	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00033	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-14
 Client ID: PB-841-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 17:10
 Analyst: NLK
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00024	1
Benzene	0.00032	J	mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-15
 Client ID: DUP-42
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 17:30
 Analyst: NLK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-16
 Client ID: FB-220712-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:35
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 12:32
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-16
 Client ID: FB-220712-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:35
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:53
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-17
 Client ID: TB-220712
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 12:38
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-17
 Client ID: TB-220712
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 11:16
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 10:38
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 16-17 Batch: WG1662837-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/15/22 11:31
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02-11 Batch: WG1663911-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:14
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1664129-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/16/22 14:32
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 13-15 Batch: WG1664163-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:44
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 16-17 Batch: WG1664179-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/17/22 15:00
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 12 Batch: WG1664220-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	104		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236966

Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 16-17 Batch: WG1662837-2									
1,2-Dibromoethane	102		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02-11 Batch: WG1663911-3 WG1663911-4								
Methyl tert butyl ether	84		81		66-130	4		30
Benzene	84		79		70-130	6		30
1,2-Dichloroethane	84		81		70-130	4		30
Toluene	84		79		70-130	6		30
1,2-Dibromoethane	92		87		70-130	6		30
Ethylbenzene	84		79		70-130	6		30
p/m-Xylene	89		83		70-130	7		30
o-Xylene	87		83		70-130	5		30
Isopropylbenzene	82		78		70-130	5		30
1,3,5-Trimethylbenzene	82		79		70-130	4		30
1,2,4-Trimethylbenzene	81		78		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	99		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	83		83		70-130
Dibromofluoromethane	106		103		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1664129-3 WG1664129-4								
Methyl tert butyl ether	115		114		66-130	1		30
Benzene	103		102		70-130	1		30
1,2-Dichloroethane	97		96		70-130	1		30
Toluene	103		102		70-130	1		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	100		99		70-130	1		30
p/m-Xylene	100		99		70-130	1		30
o-Xylene	101		100		70-130	1		30
Isopropylbenzene	100		99		70-130	1		30
1,3,5-Trimethylbenzene	98		97		70-130	1		30
1,2,4-Trimethylbenzene	101		100		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	92		93		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 13-15 Batch: WG1664163-3 WG1664163-4								
Methyl tert butyl ether	91		88		66-130	3		30
Benzene	82		78		70-130	5		30
1,2-Dichloroethane	87		84		70-130	4		30
Toluene	75		72		70-130	4		30
1,2-Dibromoethane	85		82		70-130	4		30
Ethylbenzene	81		77		70-130	5		30
p/m-Xylene	82		78		70-130	5		30
o-Xylene	84		81		70-130	4		30
Isopropylbenzene	82		77		70-130	6		30
1,3,5-Trimethylbenzene	83		79		70-130	5		30
1,2,4-Trimethylbenzene	82		78		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	101		101		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 16-17 Batch: WG1664179-3 WG1664179-4								
Methyl tert butyl ether	94		96		63-130	2		20
Benzene	94		95		70-130	1		20
1,2-Dichloroethane	93		94		70-130	1		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	110		120		70-130	9		20
1,3,5-Trimethylbenzene	100		110		64-130	10		20
1,2,4-Trimethylbenzene	100		110		70-130	10		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		95		70-130
Toluene-d8	110		109		70-130
4-Bromofluorobenzene	121		123		70-130
Dibromofluoromethane	91		91		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 12 Batch: WG1664220-3 WG1664220-4								
Methyl tert butyl ether	89		89		66-130	0		30
Benzene	94		94		70-130	0		30
1,2-Dichloroethane	89		88		70-130	1		30
Toluene	94		96		70-130	2		30
1,2-Dibromoethane	94		98		70-130	4		30
Ethylbenzene	94		94		70-130	0		30
p/m-Xylene	98		99		70-130	1		30
o-Xylene	94		96		70-130	2		30
Isopropylbenzene	91		90		70-130	1		30
1,3,5-Trimethylbenzene	90		89		70-130	1		30
1,2,4-Trimethylbenzene	88		87		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		99		70-130
Toluene-d8	99		101		70-130
4-Bromofluorobenzene	83		82		70-130
Dibromofluoromethane	106		103		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-01
 Client ID: PB-841-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 09:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:26
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	94		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-02
 Client ID: PB-841-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 09:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 22:19
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	101		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-03
 Client ID: PB-841-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 22:41
 Analyst: EK
 Percent Solids: 97%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.020	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.13	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	98		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-04
 Client ID: PB-841-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:48
 Analyst: EK
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-05
 Client ID: PB-841-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:12
 Analyst: EK
 Percent Solids: 98%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.020	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.017	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.13	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	91		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-06
 Client ID: PB-841-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 00:11
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-07
 Client ID: PB-841-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 01:40
 Analyst: EK
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.032	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.038	J	mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.037	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	72		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-08
 Client ID: PB-841-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 00:33
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	88		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-09
 Client ID: PB-841-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 00:56
 Analyst: EK
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.026	J	mg/kg	0.19	0.018	1
Phenanthrene	0.20		mg/kg	0.11	0.023	1
Anthracene	0.062	J	mg/kg	0.11	0.036	1
Pyrene	0.35		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.22		mg/kg	0.11	0.021	1
Chrysene	0.22		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.28		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.23		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-10
 Client ID: PB-841-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:34
 Analyst: EK
 Percent Solids: 97%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	89		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-11
 Client ID: PB-841-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:04
 Analyst: EK
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	88		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-12
 Client ID: PB-841-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 01:18
 Analyst: EK
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-13
 Client ID: PB-841-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:55
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/19/22 15:24
 Analyst: JG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	0.036	J	mg/kg	0.18	0.017	1
Phenanthrene	0.39		mg/kg	0.11	0.022	1
Anthracene	0.088	J	mg/kg	0.11	0.034	1
Pyrene	0.41		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.24		mg/kg	0.11	0.020	1
Chrysene	0.21		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.26		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.22		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.14		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	64		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-14
 Client ID: PB-841-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/19/22 15:48
 Analyst: JG
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.032	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.054	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.035	J	mg/kg	0.11	0.020	1
Chrysene	0.044	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.061	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.044	J	mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.039	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	66		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-15
 Client ID: DUP-42
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:56
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.020	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.13	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	98		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-16
 Client ID: FB-220712-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:35
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 16:03
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	32		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	35	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/15/22 15:15
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 16 Batch: WG1662556-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	31		23-120
2-Fluorobiphenyl	32		15-120
4-Terphenyl-d14	34	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/14/22 17:49
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-15 Batch: WG1662622-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	69		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 16 Batch: WG1662556-2 WG1662556-3								
Naphthalene	57		57		40-140	0		40
Fluorene	58		62		40-140	7		40
Phenanthrene	57		61		40-140	7		40
Anthracene	57		61		40-140	7		40
Pyrene	61		64		26-127	5		40
Benzo(a)anthracene	59		62		40-140	5		40
Chrysene	57		63		40-140	10		40
Benzo(b)fluoranthene	60		70		40-140	15		40
Benzo(a)pyrene	61		65		40-140	6		40
Benzo(ghi)perylene	58		61		40-140	5		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	27		29		23-120
2-Fluorobiphenyl	29		30		15-120
4-Terphenyl-d14	30	Q	33	Q	41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-15 Batch: WG1662622-2 WG1662622-3								
Naphthalene	78		87		40-140	11		50
Fluorene	81		90		40-140	11		50
Phenanthrene	77		87		40-140	12		50
Anthracene	80		91		40-140	13		50
Pyrene	74		83		35-142	11		50
Benzo(a)anthracene	80		87		40-140	8		50
Chrysene	81		91		40-140	12		50
Benzo(b)fluoranthene	76		84		40-140	10		50
Benzo(a)pyrene	86		94		40-140	9		50
Benzo(ghi)perylene	71		78		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	88		98		23-120
2-Fluorobiphenyl	81		85		30-120
4-Terphenyl-d14	80		88		18-120



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-01

Date Collected: 07/12/22 09:30

Client ID: PB-841-01-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.27		mg/kg	2.07	0.111	1	07/13/22 21:00	07/18/22 14:51	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-02

Date Collected: 07/12/22 09:50

Client ID: PB-841-02-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.32		mg/kg	1.98	0.106	1	07/14/22 09:10	07/18/22 10:11	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-03
 Client ID: PB-841-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.07		mg/kg	2.01	0.108	1	07/14/22 09:10	07/18/22 10:15	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-04
 Client ID: PB-841-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.88		mg/kg	2.00	0.107	1	07/14/22 09:10	07/18/22 10:58	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-05

Date Collected: 07/12/22 10:50

Client ID: PB-841-05-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.54		mg/kg	2.00	0.107	1	07/14/22 09:10	07/18/22 11:03	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-06

Date Collected: 07/12/22 11:10

Client ID: PB-841-06-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.07		mg/kg	2.21	0.118	1	07/14/22 09:10	07/18/22 11:07	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-07
 Client ID: PB-841-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.11		mg/kg	2.48	0.133	1	07/14/22 09:10	07/18/22 11:12	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-08
 Client ID: PB-841-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.00		mg/kg	2.04	0.109	1	07/14/22 09:10	07/18/22 11:16	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-09
 Client ID: PB-841-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.00		mg/kg	2.17	0.116	1	07/14/22 09:10	07/18/22 11:21	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-10
 Client ID: PB-841-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.76		mg/kg	2.02	0.108	1	07/14/22 09:10	07/18/22 11:25	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-11

Date Collected: 07/12/22 13:30

Client ID: PB-841-11-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.51		mg/kg	2.06	0.110	1	07/14/22 09:10	07/18/22 11:30	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-12

Date Collected: 07/12/22 13:40

Client ID: PB-841-12-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.72		mg/kg	2.24	0.120	1	07/14/22 09:10	07/18/22 11:34	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-13

Date Collected: 07/12/22 13:55

Client ID: PB-841-13-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	93.9		mg/kg	2.10	0.113	1	07/14/22 09:10	07/18/22 12:02	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-14

Date Collected: 07/12/22 14:30

Client ID: PB-841-14-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	38.9		mg/kg	2.08	0.111	1	07/14/22 09:10	07/18/22 12:07	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-15
 Client ID: DUP-42
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.60		mg/kg	2.00	0.107	1	07/14/22 09:10	07/18/22 12:11	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-16
 Client ID: FB-220712-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:35
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 16:58	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 16 Batch: WG1662468-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 14:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1662480-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/13/22 21:00	07/18/22 11:53	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02-15 Batch: WG1662657-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/14/22 09:10	07/18/22 09:57	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 Batch: WG1662468-2								
Lead, Total	103		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1662480-2 SRM Lot Number: D113-540								
Lead, Total	76		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 02-15 Batch: WG1662657-2 SRM Lot Number: D113-540								
Lead, Total	90		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 QC Batch ID: WG1662468-3 QC Sample: L2236962-19 Client ID: MS Sample												
Lead, Total	ND	530	530.0	100		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1662480-3 QC Sample: L2236962-01 Client ID: MS Sample												
Lead, Total	1.62J	43.9	22.6	51	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 02-15 QC Batch ID: WG1662657-3 QC Sample: L2235484-01 Client ID: MS Sample												
Lead, Total	9.34	54.7	43.2	62	Q	-	-		75-125	-		20

Lab Duplicate Analysis *Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236966

Report Date: 07/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 QC Batch ID: WG1662468-4 QC Sample: L2236962-19 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1662480-4 QC Sample: L2236962-01 Client ID: DUP Sample						
Lead, Total	1.62J	1.66J	mg/kg	NC		20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-01

Date Collected: 07/12/22 09:30

Client ID: PB-841-01-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.7		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-02

Date Collected: 07/12/22 09:50

Client ID: PB-841-02-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.9		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-03

Date Collected: 07/12/22 10:10

Client ID: PB-841-03-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.6		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-04

Date Collected: 07/12/22 10:30

Client ID: PB-841-04-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.2		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-05

Date Collected: 07/12/22 10:50

Client ID: PB-841-05-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	98.0		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-06

Date Collected: 07/12/22 11:10

Client ID: PB-841-06-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.3		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-07

Date Collected: 07/12/22 11:30

Client ID: PB-841-07-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.9		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-08

Date Collected: 07/12/22 11:50

Client ID: PB-841-08-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.2		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-09

Date Collected: 07/12/22 12:10

Client ID: PB-841-09-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-10

Date Collected: 07/12/22 12:30

Client ID: PB-841-10-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.7		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-11
Client ID: PB-841-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:30
Date Received: 07/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.2		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-12

Date Collected: 07/12/22 13:40

Client ID: PB-841-12-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.2		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-13

Date Collected: 07/12/22 13:55

Client ID: PB-841-13-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.4		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-14

Date Collected: 07/12/22 14:30

Client ID: PB-841-14-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.4		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-15

Date Collected: 07/12/22 00:00

Client ID: DUP-42

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.4		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236966

Report Date: 07/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-15 QC Batch ID: WG1662270-1 QC Sample: L2236966-01 Client ID: PB-841-01-SS01						
Solids, Total	95.7	95.9	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236966-01A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-01B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-01C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-01D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-01F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-02A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-02B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-02C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-02D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-02F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-03A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-03B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-03C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-03D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-03F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-04A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-04B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-04C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-04D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236966-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-04F	Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-04G	Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-05A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-05B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-05C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-05D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-05F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-06A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-06B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-06C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-06D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-06F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-07A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-07B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-07C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-07D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-07F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-08A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-08B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-08C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-08D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-08F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-09A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236966-09B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-09C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-09D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-09E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-09F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-10A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-10B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-10C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-10D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-10F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-11A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-11B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-11C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-11D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-11F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-12A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-12B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-12C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-12D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-12F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-13A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-13B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-13C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-13D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236966-13F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-14A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-14B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-14C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-14D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-14F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-15A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-15B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-15C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-15D	Metals Only-Glass 60mL/2oz unpreserved	B	N/A	N/A	4.3	Y	Absent		PB-TI(180)
L2236966-15E	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2236966-16A	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2236966-16B	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2236966-16C	Vial HCl preserved	B	NA		4.3	Y	Absent		8011(14)
L2236966-16D	Plastic 250ml HNO3 preserved	B	<2	<2	4.3	Y	Absent		PB-6020T-PPB(180)
L2236966-16E	Amber 250ml unpreserved	B	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2236966-16F	Amber 250ml unpreserved	B	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2236966-17A	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2236966-17B	Vial HCl preserved	B	NA		4.3	N	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 2 OF 2



Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3286

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/13/22

ALPHA Job #: L2236966

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

SHORTLIST 1-5
 VOC. PORTION OF SL

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Lab to do
 Preservation
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
-11	PB-841-11-5501	7/12	1330	S	FS
-12	PB-841-12-5501		1340	S	
-13	PB-841-13-5501		1355	S	
-14	PB-841-14-5501		1430	S	
-15	DUP-42		-	S	
-16	PB-226712-3		1435	W	
-17	TB-226712				

Container Type

Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	7/12/22 1455	<i>[Signature]</i>	7/12/22 1455
<i>[Signature]</i>	7/12/22 1800	<i>[Signature]</i>	7/12/22 1800
<i>[Signature]</i>	7/13/22 0900	<i>[Signature]</i>	7/13/22 0900

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

PADEP Short List Analytical Suites per Table III-5:

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene



ANALYTICAL REPORT

Lab Number:	L2237250
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/20/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2237250-01	PB-882-03-SS01	SOIL	PHILADELPHIA, PA	07/13/22 11:30	07/13/22
L2237250-02	PB-882-04-SS01	SOIL	PHILADELPHIA, PA	07/13/22 11:40	07/13/22
L2237250-03	PB-882-05-SS01	SOIL	PHILADELPHIA, PA	07/13/22 11:50	07/13/22
L2237250-04	PB-882-06-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:00	07/13/22
L2237250-05	PB-882-07-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:10	07/13/22
L2237250-06	PB-882-08-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:20	07/13/22
L2237250-07	PB-882-09-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:30	07/13/22
L2237250-08	PB-882-11-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:40	07/13/22
L2237250-09	PB-882-12-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:50	07/13/22
L2237250-10	PB-882-13-SS01	SOIL	PHILADELPHIA, PA	07/13/22 13:00	07/13/22
L2237250-11	FB-071322-1	WATER	PHILADELPHIA, PA	07/13/22 14:00	07/13/22
L2237250-12	DUP-43	SOIL	PHILADELPHIA, PA	07/13/22 00:00	07/13/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2237250-06: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (191%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2237250-07: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (167%) and 4-bromofluorobenzene (422%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Total Metals

L2237250-01 through -10: The sample has an elevated detection limit for lead, due to the dilution required by matrix interferences encountered during analysis.

L2237250-12: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative

Date: 07/20/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-01
 Client ID: PB-882-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 10:01
 Analyst: NLK
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-02
 Client ID: PB-882-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 10:28
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00058		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.00014	J	mg/kg	0.00095	0.00013	1
p/m-Xylene	0.00060	J	mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	0.00060	J	mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	0.00038	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.00096	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-03
 Client ID: PB-882-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 10:55
 Analyst: NLK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	107		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-04
 Client ID: PB-882-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 11:22
 Analyst: NLK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-05
 Client ID: PB-882-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:10
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 11:49
 Analyst: NLK
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-06
 Client ID: PB-882-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:20
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 09:17
 Analyst: NLK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	0.017		mg/kg	0.00089	0.00012	1
p/m-Xylene	0.0045		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	0.0045		mg/kg	0.00089	0.00026	1
Isopropylbenzene	0.039		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	0.016		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.041		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	191	Q	70-130
Dibromofluoromethane	76		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-07
 Client ID: PB-882-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 10:09
 Analyst: NLK
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	0.00079	J	mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	0.0014		mg/kg	0.0011	0.00032	1
Xylenes, Total	0.0014		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.042		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	167	Q	70-130
4-Bromofluorobenzene	422	Q	70-130
Dibromofluoromethane	73		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-08
 Client ID: PB-882-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 12:16
 Analyst: NLK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0016	J	mg/kg	0.0017	0.00017	1
Benzene	0.00032	J	mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00049	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	0.00010	J	mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-09
 Client ID: PB-882-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 12:42
 Analyst: NLK
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00037	J	mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-10
 Client ID: PB-882-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 13:09
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-11
 Client ID: FB-071322-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 16:49
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-11
 Client ID: FB-071322-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 10:01
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-12
 Client ID: DUP-43
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 13:35
 Analyst: NLK
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	0.00021	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 16:10
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 11 Batch: WG1663450-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/16/22 08:52
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 11 Batch: WG1663980-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/18/22 09:34
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-05,08-10,12 Batch: WG1664674-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 06-07 Batch: WG1665306-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	90		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237250

Project Number: 200.00135.006

Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 11 Batch: WG1663450-2									
1,2-Dibromoethane	97		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 11 Batch: WG1663980-3 WG1663980-4								
Methyl tert butyl ether	97		96		63-130	1		20
Benzene	94		93		70-130	1		20
1,2-Dichloroethane	97		95		70-130	2		20
Toluene	96		97		70-130	1		20
Ethylbenzene	97		98		70-130	1		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	110		110		70-130	0		20
1,3,5-Trimethylbenzene	100		100		64-130	0		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		95		70-130
Toluene-d8	106		107		70-130
4-Bromofluorobenzene	115		115		70-130
Dibromofluoromethane	93		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-05,08-10,12 Batch: WG1664674-3 WG1664674-4								
Methyl tert butyl ether	87		86		66-130	1		30
Benzene	87		87		70-130	0		30
1,2-Dichloroethane	85		86		70-130	1		30
Toluene	88		89		70-130	1		30
1,2-Dibromoethane	93		93		70-130	0		30
Ethylbenzene	87		87		70-130	0		30
p/m-Xylene	91		92		70-130	1		30
o-Xylene	89		90		70-130	1		30
Isopropylbenzene	85		85		70-130	0		30
1,3,5-Trimethylbenzene	85		85		70-130	0		30
1,2,4-Trimethylbenzene	84		83		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		96		70-130
Toluene-d8	99		101		70-130
4-Bromofluorobenzene	84		84		70-130
Dibromofluoromethane	106		105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237250

Project Number: 200.00135.006

Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 06-07 Batch: WG1665306-3 WG1665306-4								
Methyl tert butyl ether	100		98		66-130	2		30
Benzene	88		84		70-130	5		30
1,2-Dichloroethane	69	Q	66	Q	70-130	4		30
Toluene	88		85		70-130	3		30
1,2-Dibromoethane	85		83		70-130	2		30
Ethylbenzene	85		82		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	92		89		70-130	3		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	104		103		70-130
Dibromofluoromethane	78		77		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-01
 Client ID: PB-882-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 15:47
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-02
 Client ID: PB-882-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:11
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	97		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-03
 Client ID: PB-882-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:34
 Analyst: EK
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	79		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-04
 Client ID: PB-882-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:57
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-05
 Client ID: PB-882-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:10
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 17:21
 Analyst: EK
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	133	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	101		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-06
 Client ID: PB-882-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:20
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 17:44
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.6		mg/kg	0.19	0.024	1
Fluorene	0.40		mg/kg	0.19	0.019	1
Phenanthrene	0.78		mg/kg	0.12	0.024	1
Anthracene	0.041	J	mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	139	Q	23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	91		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-07
 Client ID: PB-882-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:57
 Analyst: SLR
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.060	J	mg/kg	0.20	0.025	1
Fluorene	0.99		mg/kg	0.20	0.020	1
Phenanthrene	1.7		mg/kg	0.12	0.025	1
Anthracene	0.076	J	mg/kg	0.12	0.040	1
Pyrene	0.062	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.024	J	mg/kg	0.12	0.023	1
Chrysene	0.094	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	98		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-08
 Client ID: PB-882-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 18:07
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	142	Q	23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	103		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-09
 Client ID: PB-882-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 18:30
 Analyst: EK
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	139	Q	23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-10
 Client ID: PB-882-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 18:54
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	125	Q	23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-11
 Client ID: FB-071322-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 19:51
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 01:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.05	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	37		23-120
2-Fluorobiphenyl	42		15-120
4-Terphenyl-d14	52		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-12
 Client ID: DUP-43
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:33
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/14/22 17:49
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 12 Batch: WG1662622-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/15/22 08:47
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-10 Batch: WG1663095-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	101		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/15/22 18:13
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/15/22 01:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 11 Batch: WG1663135-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	39		23-120
2-Fluorobiphenyl	43		15-120
4-Terphenyl-d14	43		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 12 Batch: WG1662622-2 WG1662622-3								
Naphthalene	78		87		40-140	11		50
Fluorene	81		90		40-140	11		50
Phenanthrene	77		87		40-140	12		50
Anthracene	80		91		40-140	13		50
Pyrene	74		83		35-142	11		50
Benzo(a)anthracene	80		87		40-140	8		50
Chrysene	81		91		40-140	12		50
Benzo(b)fluoranthene	76		84		40-140	10		50
Benzo(a)pyrene	86		94		40-140	9		50
Benzo(ghi)perylene	71		78		40-140	9		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	88		98		23-120
2-Fluorobiphenyl	81		85		30-120
4-Terphenyl-d14	80		88		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-10 Batch: WG1663095-2 WG1663095-3								
Naphthalene	76		78		40-140	3		50
Fluorene	84		83		40-140	1		50
Phenanthrene	78		77		40-140	1		50
Anthracene	81		79		40-140	3		50
Pyrene	82		80		35-142	2		50
Benzo(a)anthracene	85		84		40-140	1		50
Chrysene	86		84		40-140	2		50
Benzo(b)fluoranthene	87		91		40-140	4		50
Benzo(a)pyrene	90		95		40-140	5		50
Benzo(ghi)perylene	85		78		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	113		116		23-120
2-Fluorobiphenyl	78		78		30-120
4-Terphenyl-d14	91		89		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 11 Batch: WG1663135-2 WG1663135-3								
Naphthalene	90		84		40-140	7		40
Fluorene	90		88		40-140	2		40
Phenanthrene	91		85		40-140	7		40
Anthracene	90		86		40-140	5		40
Pyrene	96		91		26-127	5		40
Benzo(a)anthracene	94		90		40-140	4		40
Chrysene	90		86		40-140	5		40
Benzo(b)fluoranthene	97		90		40-140	7		40
Benzo(a)pyrene	95		88		40-140	8		40
Benzo(ghi)perylene	94		90		40-140	4		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	43		39		23-120
2-Fluorobiphenyl	43		42		15-120
4-Terphenyl-d14	48		45		41-149



METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-01
 Client ID: PB-882-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.65		mg/kg	4.74	0.254	2	07/14/22 20:35	07/19/22 09:45	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-02
 Client ID: PB-882-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.10		mg/kg	4.59	0.246	2	07/14/22 20:35	07/19/22 09:49	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-03
 Client ID: PB-882-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.09		mg/kg	4.50	0.241	2	07/14/22 20:35	07/19/22 10:12	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-04
 Client ID: PB-882-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.96		mg/kg	4.56	0.244	2	07/14/22 20:35	07/19/22 10:17	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-05
 Client ID: PB-882-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:10
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.62		mg/kg	4.66	0.250	2	07/14/22 20:35	07/19/22 10:22	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-06
 Client ID: PB-882-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:20
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.78	J	mg/kg	4.65	0.249	2	07/14/22 20:35	07/19/22 10:26	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-07
 Client ID: PB-882-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.45	J	mg/kg	4.80	0.257	2	07/14/22 20:35	07/19/22 10:31	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-08
 Client ID: PB-882-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.69		mg/kg	4.61	0.247	2	07/14/22 20:35	07/19/22 10:35	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-09
 Client ID: PB-882-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.37		mg/kg	4.65	0.249	2	07/14/22 20:35	07/19/22 10:40	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-10
 Client ID: PB-882-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.83		mg/kg	4.54	0.243	2	07/14/22 20:35	07/19/22 10:44	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-11
 Client ID: FB-071322-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 20:08	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-12
 Client ID: DUP-43
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.8		mg/kg	4.44	0.238	2	07/14/22 21:44	07/19/22 20:35	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 12 Batch: WG1663051-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/14/22 21:44	07/19/22 00:37	1,6010D	BV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-10 Batch: WG1663069-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/14/22 20:35	07/19/22 07:16	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 11 Batch: WG1663390-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 18:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237250

Report Date: 07/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Metals - Mansfield Lab Associated sample(s): 12 Batch: WG1663051-2 SRM Lot Number: D113-540								
Lead, Total	86		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 01-10 Batch: WG1663069-2 SRM Lot Number: D113-540								
Lead, Total	82		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 11 Batch: WG1663390-2								
Lead, Total	102		-		80-120	-		

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1663051-3 QC Sample: L2237250-12 Client ID: DUP-43												
Lead, Total	11.8	49.3	50.6	79		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1663069-3 QC Sample: L2237246-02 Client ID: MS Sample												
Lead, Total	3.36J	43.7	28.9	66	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 11 QC Batch ID: WG1663390-3 WG1663390-4 QC Sample: L2237672-03 Client ID: MS Sample												
Lead, Total	0.9553J	530	569.8	108		561.0	106		75-125	2		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1663051-4 QC Sample: L2237250-12 Client ID: DUP-43						
Lead, Total	11.8	11.4	mg/kg	3		20
Total Metals - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1663069-4 QC Sample: L2237246-02 Client ID: DUP Sample						
Lead, Total	3.36J	2.92J	mg/kg	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-01
Client ID: PB-882-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-02
Client ID: PB-882-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:40
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.8		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-03
Client ID: PB-882-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:50
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.4		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-04
Client ID: PB-882-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-05
Client ID: PB-882-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:10
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-06
Client ID: PB-882-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:20
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-07
Client ID: PB-882-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.0		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-08
Client ID: PB-882-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:40
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.1		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-09
Client ID: PB-882-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:50
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-10
Client ID: PB-882-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-12
Client ID: DUP-43
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10,12 QC Batch ID: WG1663380-1 QC Sample: L2237250-01 Client ID: PB-882-03-SS01						
Solids, Total	82.2	81.8	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237250**Project Number:** 200.00135.006**Report Date:** 07/20/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237250-01A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-01B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-01C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-01D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-01F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-02A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-02B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-02C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-02D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-02F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-03A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-03B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-03C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-03D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-03F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-04A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-04B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-04C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-04D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237250**Project Number:** 200.00135.006**Report Date:** 07/20/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237250-04F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-05A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-05B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-05C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-05D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-05F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-06A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-06B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-06C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-06D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-06F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-07A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-07B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-07C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-07D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-07F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-08A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-08B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-08C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-08D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-08F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-09A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-09B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-09C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237250**Project Number:** 200.00135.006**Report Date:** 07/20/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237250-09D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-09F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-10A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-10B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-10C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-10D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-10F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-11A	Vial HCl preserved	A	NA		4.6	Y	Absent		PA-8260(14)
L2237250-11B	Vial HCl preserved	A	NA		4.6	Y	Absent		PA-8260(14)
L2237250-11C	Vial HCl preserved	A	NA		4.6	Y	Absent		PA-8260(14)
L2237250-11D	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14)
L2237250-11E	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14)
L2237250-11F	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2237250-11G	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2237250-11H	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		PB-6020T-PPB(180)
L2237250-12A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-12B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-12C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-12D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-12F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237250

Project Number: 200.00135.006

Report Date: 07/20/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 2

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/14/22

ALPHA Job #: L2237250

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

Short list 1-5

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
27250	1 PB-882-03-5501	7/13/22	1130	S	W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2 PB-882-04-5501		1140			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3 PB-882-05-5501		1150			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4 PB-882-06-5501		1200			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5 PB-882-07-5501		1210			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	6 PB-882-08-5501		1220			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7 PB-882-09-5501		1230			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	8 PB-882-11-5501		1240			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9 PB-882-12-5501		1250			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	10 PB-882-13-5501		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Preservation
 Lab to do
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
27250	1 PB-882-03-5501	7/13/22	1130	S	W
	2 PB-882-04-5501		1140		
	3 PB-882-05-5501		1150		
	4 PB-882-06-5501		1200		
	5 PB-882-07-5501		1210		
	6 PB-882-08-5501		1220		
	7 PB-882-09-5501		1230		
	8 PB-882-11-5501		1240		
	9 PB-882-12-5501		1250		
	10 PB-882-13-5501		1300		

Container Type: G
 Preservative: -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	7/13/22	STJ-AAL	7/13/22 15:35
<i>[Signature]</i>	7/13/22 18:00	<i>[Signature]</i>	7-13-22
<i>[Signature]</i>	7-13-22	<i>[Signature]</i>	7/13/22 21:00

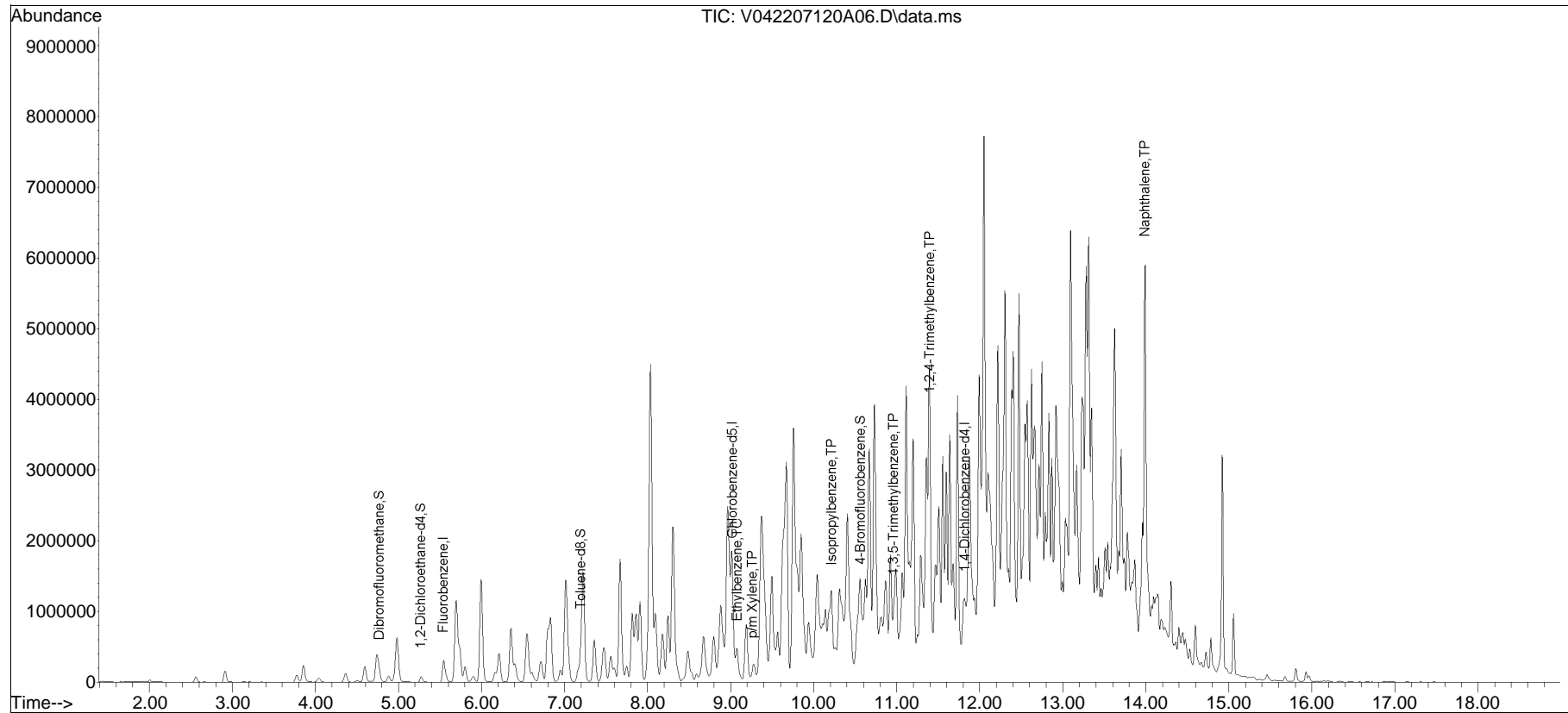
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\2207120A\
Data File : V042207120A06.D
Acq On : 20 Jul 2022 9:17 am
Operator : VOA104:NLK
Sample : L2237250-06,31,6.67,5,,B,R2F
Misc : WG1665306,ICAL19119
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jul 20 13:39:16 2022
Quant Method : I:\VOLATILES\VOA104\2022\2207120A\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list120A\V042207120A01.D•

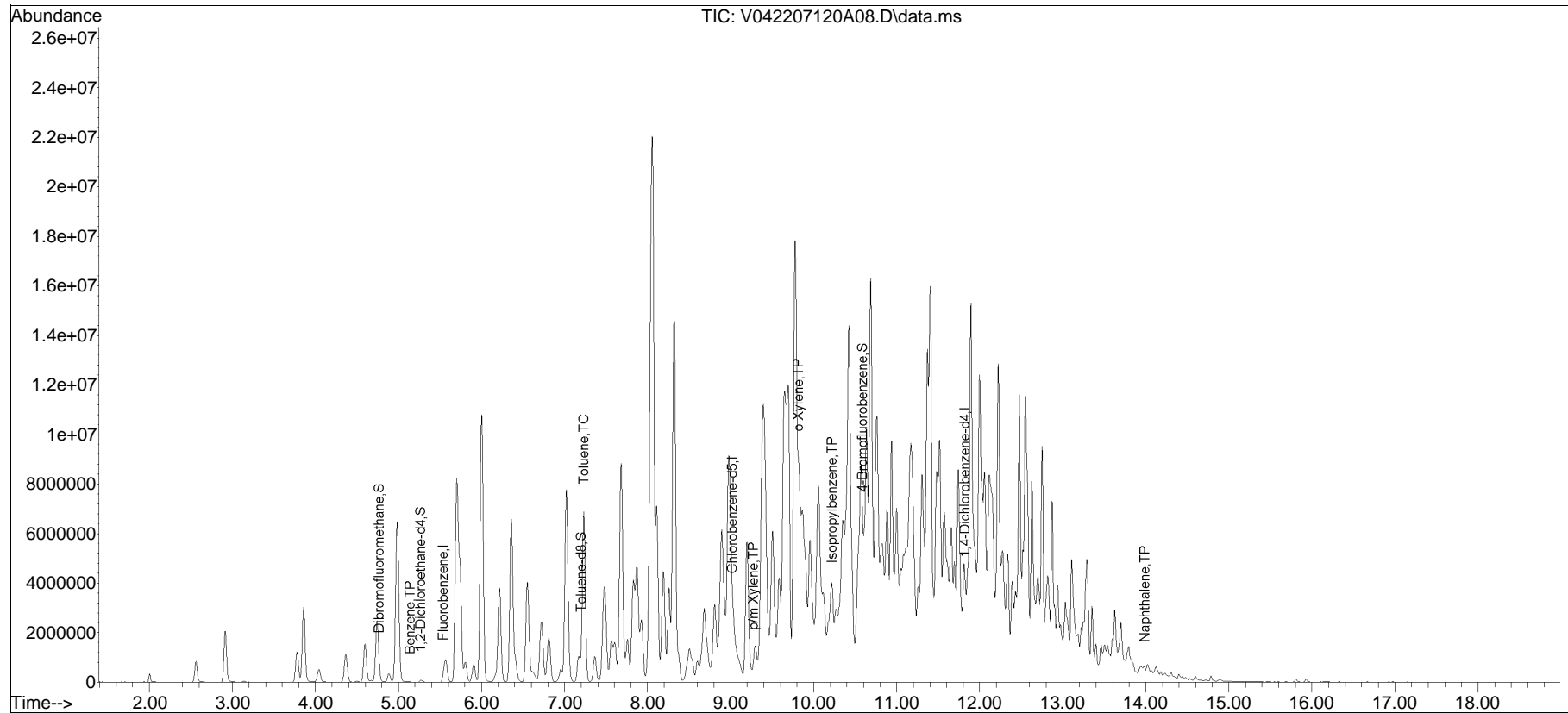


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\2207120A\
Data File : V042207120A08.D
Acq On : 20 Jul 2022 10:09 am
Operator : VOA104:NLK
Sample : L2237250-07,31,5.81,5,,B,R2F
Misc : WG1665306,ICAL19119
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 20 13:41:00 2022
Quant Method : I:\VOLATILES\VOA104\2022\2207120A\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list120A\V042207120A01.D•





ANALYTICAL REPORT

Lab Number:	L2237705
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/21/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237705

Report Date: 07/21/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2237705-01	PB-826-11-SS01	SOIL	PHILADELPHIA, PA	07/14/22 08:15	07/14/22
L2237705-02	PB-826-12-SS01	SOIL	PHILADELPHIA, PA	07/14/22 08:30	07/14/22
L2237705-03	PB-826-13-SS01	SOIL	PHILADELPHIA, PA	07/14/22 08:45	07/14/22
L2237705-04	PB-826-14-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:00	07/14/22
L2237705-05	PB-826-15-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:15	07/14/22
L2237705-06	PB-826-16-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:30	07/14/22
L2237705-07	PB-884-08-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:15	07/14/22
L2237705-08	PB-884-09-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:30	07/14/22
L2237705-09	PB-884-13-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:45	07/14/22
L2237705-10	PB-884-14-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:00	07/14/22
L2237705-11	PB-884-15-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:15	07/14/22
L2237705-12	PB-884-16-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:30	07/14/22
L2237705-13	PB-884-17-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:45	07/14/22
L2237705-14	PB-884-18-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:00	07/14/22
L2237705-15	PB-884-19-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:15	07/14/22
L2237705-16	PB-884-20-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:30	07/14/22
L2237705-17	PB-884-21-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:45	07/14/22
L2237705-18	PB-884-23-SS01	SOIL	PHILADELPHIA, PA	07/14/22 13:00	07/14/22
L2237705-19	DUP-44	SOIL	PHILADELPHIA, PA	07/14/22 00:00	07/14/22
L2237705-20	FB-071422-3	WATER	PHILADELPHIA, PA	07/14/22 13:05	07/14/22
L2237705-21	FB-071422-4	WATER	PHILADELPHIA, PA	07/14/22 13:10	07/14/22
L2237705-22	TB-071422	WATER	PHILADELPHIA, PA	07/14/22 00:00	07/14/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2237705-07: The surrogate recovery was outside the acceptance criteria for 1,2-dichloroethane-d4 (131%) due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate result(s) within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies.

L2237705-08: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (139%) and 4-bromofluorobenzene (149%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2237705-11: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (157%) and 4-bromofluorobenzene (157%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2237705-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (143%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics by SIM

The WG1663477-1 Method Blank, associated with L2237705-20 and -21, has a concentration above the reporting limit for benzo(b)fluoranthene. Since the associated sample concentrations are either greater than 10x the blank concentration or non-detect to the RL for this target analyte, no corrective action is required. Any results detected below the reporting limit are qualified with a "B".

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Case Narrative (continued)

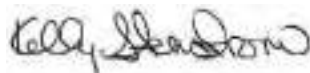
Total Metals

L2237705-01, -02, -03, -07, and -14: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

The WG1663364-3 MS recovery, performed on L2237705-15, is outside the acceptance criteria for lead (58%). A post digestion spike was performed and yielded an unacceptable recovery of 32%. The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 07/21/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-01
 Client ID: PB-826-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 14:07
 Analyst: NLK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-02
 Client ID: PB-826-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 14:36
 Analyst: NLK
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-03
 Client ID: PB-826-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 15:06
 Analyst: NLK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00070	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00076	1
1,2-Dibromoethane	ND		mg/kg	0.00070	0.00041	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00079	1
o-Xylene	ND		mg/kg	0.0014	0.00041	1
Xylenes, Total	ND		mg/kg	0.0014	0.00041	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-04
 Client ID: PB-826-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 21:40
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.062	0.016	1
Toluene	ND		mg/kg	0.062	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	0.73		mg/kg	0.062	0.0087	1
p/m-Xylene	0.16		mg/kg	0.12	0.035	1
o-Xylene	0.054	J	mg/kg	0.062	0.018	1
Xylenes, Total	0.21	J	mg/kg	0.062	0.018	1
Isopropylbenzene	0.28		mg/kg	0.062	0.0068	1
1,3,5-Trimethylbenzene	4.4		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	12.		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	85		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-05
 Client ID: PB-826-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 16:09
 Analyst: AJK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0034	0.00035	1
Benzene	ND		mg/kg	0.00086	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	ND		mg/kg	0.0017	0.00094	1
1,2-Dibromoethane	ND		mg/kg	0.00086	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0034	0.00097	1
o-Xylene	ND		mg/kg	0.0017	0.00050	1
Xylenes, Total	ND		mg/kg	0.0017	0.00050	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0034	0.00033	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0034	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-06
 Client ID: PB-826-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 16:09
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0036	0.00036	1
Benzene	ND		mg/kg	0.00089	0.00030	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00046	1
Toluene	ND		mg/kg	0.0018	0.00096	1
1,2-Dibromoethane	ND		mg/kg	0.00089	0.00052	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0036	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00052	1
Xylenes, Total	ND		mg/kg	0.0018	0.00052	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00019	1
1,3,5-Trimethylbenzene	0.00089	J	mg/kg	0.0036	0.00034	1
1,2,4-Trimethylbenzene	0.00061	J	mg/kg	0.0036	0.00059	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07
 Client ID: PB-884-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 22:09
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.15		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	0.082		mg/kg	0.065	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	0.14		mg/kg	0.065	0.0092	1
p/m-Xylene	4.9		mg/kg	0.13	0.036	1
o-Xylene	0.50		mg/kg	0.065	0.019	1
Xylenes, Total	5.4		mg/kg	0.065	0.019	1
Isopropylbenzene	0.080		mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	0.66		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	2.1		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07
 Client ID: PB-884-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/21/22 06:20
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	0.020		mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	0.00061	J	mg/kg	0.00080	0.00020	1
Toluene	0.00095		mg/kg	0.00080	0.00043	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00023	1
Ethylbenzene	0.022		mg/kg	0.00080	0.00011	1
p/m-Xylene	1.4	E	mg/kg	0.0016	0.00045	1
o-Xylene	0.054		mg/kg	0.00080	0.00023	1
Isopropylbenzene	0.014		mg/kg	0.00080	0.00008	1
1,3,5-Trimethylbenzene	0.12		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	0.34	E	mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-08
 Client ID: PB-884-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 17:38
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	2.0		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.068	0.017	1
Toluene	13.		mg/kg	0.068	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	6.6		mg/kg	0.068	0.0096	1
p/m-Xylene	28.		mg/kg	0.14	0.038	1
o-Xylene	13.		mg/kg	0.068	0.020	1
Xylenes, Total	41.		mg/kg	0.068	0.020	1
Isopropylbenzene	2.8		mg/kg	0.068	0.0074	1
1,3,5-Trimethylbenzene	3.7		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	12.		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	139	Q	70-130
4-Bromofluorobenzene	149	Q	70-130
Dibromofluoromethane	71		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-09
 Client ID: PB-884-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 16:40
 Analyst: NLK
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-10
 Client ID: PB-884-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 17:11
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-11
 Client ID: PB-884-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/21/22 09:34
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	2.6		mg/kg	0.029	0.0098	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	9.0		mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	8.8		mg/kg	0.059	0.0083	1
p/m-Xylene	32.		mg/kg	0.12	0.033	1
o-Xylene	15.		mg/kg	0.059	0.017	1
Xylenes, Total	47.		mg/kg	0.059	0.017	1
Isopropylbenzene	3.6		mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	4.5		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	14.		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	157	Q	70-130
4-Bromofluorobenzene	157	Q	70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-12
 Client ID: PB-884-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 17:41
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0036	0.00036	1
Benzene	ND		mg/kg	0.00090	0.00030	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00046	1
Toluene	ND		mg/kg	0.0018	0.00097	1
1,2-Dibromoethane	ND		mg/kg	0.00090	0.00052	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0036	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00052	1
Xylenes, Total	ND		mg/kg	0.0018	0.00052	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00020	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0036	0.00035	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0036	0.00060	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-13
 Client ID: PB-884-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 18:11
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00024	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-14
 Client ID: PB-884-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 18:41
 Analyst: NLK
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00054	J	mg/kg	0.0022	0.00022	1
Benzene	0.035		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	0.024		mg/kg	0.0011	0.00015	1
p/m-Xylene	0.026		mg/kg	0.0022	0.00061	1
o-Xylene	0.0015		mg/kg	0.0011	0.00032	1
Xylenes, Total	0.028		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.0053		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.010		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	0.033		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-15
 Client ID: PB-884-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 19:11
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00036	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	0.0024		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.024		mg/kg	0.0023	0.00063	1
o-Xylene	0.026		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.050		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0044		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.022		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.052		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	129		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-16
 Client ID: PB-884-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 19:40
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-17
 Client ID: PB-884-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 20:10
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00028	1
Xylenes, Total	ND		mg/kg	0.00094	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-18
 Client ID: PB-884-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 06:09
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	84		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-19
 Client ID: DUP-44
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 00:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:58
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.068		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.071	0.018	1
Toluene	0.051	J	mg/kg	0.071	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.56		mg/kg	0.071	0.010	1
p/m-Xylene	21.		mg/kg	0.14	0.040	1
o-Xylene	8.4		mg/kg	0.071	0.021	1
Xylenes, Total	29.		mg/kg	0.071	0.021	1
Isopropylbenzene	1.0		mg/kg	0.071	0.0077	1
1,3,5-Trimethylbenzene	4.8		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	15.		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	143	Q	70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-20
 Client ID: FB-071422-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:05
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:03
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-20
 Client ID: FB-071422-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:05
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 14:16
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	128		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	119		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-21
 Client ID: FB-071422-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:10
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-21
 Client ID: FB-071422-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 14:38
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-22
 Client ID: TB-071422
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 00:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:16
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-22
 Client ID: TB-071422
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 00:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 14:59
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	124		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 16:10
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 20-22 Batch: WG1663450-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/17/22 13:55
 Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 20-22 Batch: WG1664113-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
1,2-Dibromoethane	ND		ug/l	2.0	0.19
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/18/22 13:35
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03,06,09-10,12-17 Batch: WG1664656-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/18/22 13:35
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 04,07 Batch: WG1664660-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/18/22 21:42
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 18 Batch: WG1664672-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	104		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/19/22 09:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1664964-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/19/22 16:38
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 19 Batch: WG1665199-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 08 Batch: WG1665578-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	91		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/20/22 23:10
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07 Batch: WG1665590-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/21/22 08:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 11 Batch: WG1665734-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	100		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 20-22 Batch: WG1663450-2									
1,2-Dibromoethane	97		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 20-22 Batch: WG1664113-3 WG1664113-4								
Methyl tert butyl ether	90		86		63-130	5		20
Benzene	86		82		70-130	5		20
1,2-Dichloroethane	100		96		70-130	4		20
Toluene	83		84		70-130	1		20
1,2-Dibromoethane	83		82		70-130	1		20
Ethylbenzene	90		91		70-130	1		20
p/m-Xylene	90		90		70-130	0		20
o-Xylene	90		90		70-130	0		20
Isopropylbenzene	86		87		70-130	1		20
1,3,5-Trimethylbenzene	90		92		64-130	2		20
1,2,4-Trimethylbenzene	89		88		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	117		116		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	109		111		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03,06,09-10,12-17 Batch: WG1664656-3 WG1664656-4								
Methyl tert butyl ether	115		118		66-130	3		30
Benzene	108		108		70-130	0		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	108		109		70-130	1		30
1,2-Dibromoethane	106		110		70-130	4		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	107		108		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	111		110		70-130	1		30
1,3,5-Trimethylbenzene	107		107		70-130	0		30
1,2,4-Trimethylbenzene	107		108		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	91		92		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04,07 Batch: WG1664660-3 WG1664660-4								
Methyl tert butyl ether	115		118		66-130	3		30
Benzene	108		108		70-130	0		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	108		109		70-130	1		30
1,2-Dibromoethane	106		110		70-130	4		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	107		108		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	111		110		70-130	1		30
1,3,5-Trimethylbenzene	107		107		70-130	0		30
1,2,4-Trimethylbenzene	107		108		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	91		92		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 18 Batch: WG1664672-3 WG1664672-4								
Methyl tert butyl ether	90		90		66-130	0		30
Benzene	90		90		70-130	0		30
1,2-Dichloroethane	90		90		70-130	0		30
Toluene	90		92		70-130	2		30
1,2-Dibromoethane	96		98		70-130	2		30
Ethylbenzene	89		90		70-130	1		30
p/m-Xylene	94		96		70-130	2		30
o-Xylene	93		94		70-130	1		30
Isopropylbenzene	72		87		70-130	19		30
1,3,5-Trimethylbenzene	85		87		70-130	2		30
1,2,4-Trimethylbenzene	83		86		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		100		70-130
Toluene-d8	98		102		70-130
4-Bromofluorobenzene	83		84		70-130
Dibromofluoromethane	106		105		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1664964-3 WG1664964-4								
Methyl tert butyl ether	122		119		66-130	2		30
Benzene	110		103		70-130	7		30
1,2-Dichloroethane	102		100		70-130	2		30
Toluene	108		103		70-130	5		30
1,2-Dibromoethane	109		109		70-130	0		30
Ethylbenzene	107		102		70-130	5		30
p/m-Xylene	109		103		70-130	6		30
o-Xylene	108		103		70-130	5		30
Isopropylbenzene	110		103		70-130	7		30
1,3,5-Trimethylbenzene	107		101		70-130	6		30
1,2,4-Trimethylbenzene	108		102		70-130	6		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		96		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	105		105		70-130
Dibromofluoromethane	93		92		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 19 Batch: WG1665199-3 WG1665199-4								
Methyl tert butyl ether	81		84		66-130	4		30
Benzene	77		80		70-130	4		30
1,2-Dichloroethane	75		78		70-130	4		30
Toluene	71		73		70-130	3		30
1,2-Dibromoethane	79		82		70-130	4		30
Ethylbenzene	72		76		70-130	5		30
p/m-Xylene	73		76		70-130	4		30
o-Xylene	77		80		70-130	4		30
Isopropylbenzene	74		75		70-130	1		30
1,3,5-Trimethylbenzene	74		77		70-130	4		30
1,2,4-Trimethylbenzene	74		77		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	102		101		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 08 Batch: WG1665578-3 WG1665578-4								
Methyl tert butyl ether	100		98		66-130	2		30
Benzene	88		84		70-130	5		30
1,2-Dichloroethane	69	Q	66	Q	70-130	4		30
Toluene	88		85		70-130	3		30
1,2-Dibromoethane	85		83		70-130	2		30
Ethylbenzene	85		82		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	92		89		70-130	3		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	104		103		70-130
Dibromofluoromethane	78		77		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07 Batch: WG1665590-3 WG1665590-4								
Methyl tert butyl ether	102		98		66-130	4		30
Benzene	104		102		70-130	2		30
1,2-Dichloroethane	104		100		70-130	4		30
Toluene	100		99		70-130	1		30
1,2-Dibromoethane	102		98		70-130	4		30
Ethylbenzene	103		101		70-130	2		30
p/m-Xylene	104		103		70-130	1		30
o-Xylene	103		101		70-130	2		30
Isopropylbenzene	97		97		70-130	0		30
1,3,5-Trimethylbenzene	99		98		70-130	1		30
1,2,4-Trimethylbenzene	98		98		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		97		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	98		96		70-130
Dibromofluoromethane	100		99		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 11 Batch: WG1665734-3 WG1665734-4								
Methyl tert butyl ether	91		90		66-130	1		30
Benzene	95		92		70-130	3		30
1,2-Dichloroethane	98		95		70-130	3		30
Toluene	90		87		70-130	3		30
1,2-Dibromoethane	94		91		70-130	3		30
Ethylbenzene	96		92		70-130	4		30
p/m-Xylene	95		91		70-130	4		30
o-Xylene	94		91		70-130	3		30
Isopropylbenzene	95		91		70-130	4		30
1,3,5-Trimethylbenzene	96		91		70-130	5		30
1,2,4-Trimethylbenzene	95		92		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	97		96		70-130
Dibromofluoromethane	98		98		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-01
 Client ID: PB-826-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 14:40
 Analyst: SLR
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.034	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-02
 Client ID: PB-826-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:02
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-03
 Client ID: PB-826-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:25
 Analyst: SLR
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	87		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-04
 Client ID: PB-826-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:48
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.32		mg/kg	0.19	0.024	1
Fluorene	0.18	J	mg/kg	0.19	0.019	1
Phenanthrene	0.64		mg/kg	0.12	0.024	1
Anthracene	0.061	J	mg/kg	0.12	0.038	1
Pyrene	0.16		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.030	J	mg/kg	0.12	0.022	1
Chrysene	0.042	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	91		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-05
 Client ID: PB-826-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:11
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.052	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.15		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.18		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.069	J	mg/kg	0.12	0.022	1
Chrysene	0.095	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.055	J	mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.053	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.041	J	mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	93		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-06
 Client ID: PB-826-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:34
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.025	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07
 Client ID: PB-884-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:56
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.84		mg/kg	0.19	0.023	1
Fluorene	0.25		mg/kg	0.19	0.018	1
Phenanthrene	0.45		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.13		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.058	J	mg/kg	0.11	0.022	1
Chrysene	0.11		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.080	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.055	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.041	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	85		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-08
 Client ID: PB-884-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 17:19
 Analyst: SLR
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	3.2		mg/kg	0.17	0.021	1
Fluorene	0.25		mg/kg	0.17	0.017	1
Phenanthrene	0.70		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.056	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.022	J	mg/kg	0.10	0.019	1
Chrysene	0.092	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	105		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-09
 Client ID: PB-884-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 17:42
 Analyst: SLR
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	95		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-10
 Client ID: PB-884-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:04
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	101		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-11
 Client ID: PB-884-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:27
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 21:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.85		mg/kg	0.17	0.021	1
Fluorene	0.13	J	mg/kg	0.17	0.017	1
Phenanthrene	0.45		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.036	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	0.059	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	92		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-12
 Client ID: PB-884-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 15:48
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	65		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-13
 Client ID: PB-884-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:50
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	98		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-14
 Client ID: PB-884-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:13
 Analyst: SLR
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.050	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-15
 Client ID: PB-884-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:35
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.085	J	mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	0.040	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-16
 Client ID: PB-884-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:58
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	96		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-17
 Client ID: PB-884-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 16:12
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	100		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-18
 Client ID: PB-884-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 20:21
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	101		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-19
 Client ID: DUP-44
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 00:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 20:44
 Analyst: SLR
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	2.7		mg/kg	0.17	0.021	1
Fluorene	0.39		mg/kg	0.17	0.017	1
Phenanthrene	0.99		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.085	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.027	J	mg/kg	0.10	0.020	1
Chrysene	0.15		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.029	J	mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.027	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-20
 Client ID: FB-071422-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:05
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 18:09
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	37		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	42		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-21
 Client ID: FB-071422-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 18:24
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	37		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	43		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/20/22 16:29
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 20-21 Batch: WG1663477-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	0.03	J	ug/l	0.10	0.02
Benzo(a)anthracene	0.05	J	ug/l	0.05	0.02
Chrysene	0.04	J	ug/l	0.10	0.01
Benzo(b)fluoranthene	0.07		ug/l	0.05	0.01
Benzo(a)pyrene	0.04	J	ug/l	0.10	0.02
Benzo(ghi)perylene	0.05	J	ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	34		15-120
4-Terphenyl-d14	32	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D
 Analytical Date: 07/18/22 13:32
 Analyst: SLR

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-11,13-16,18-19 Batch: WG1663526-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	103		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D
 Analytical Date: 07/16/22 14:36
 Analyst: EK

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 12,17 Batch: WG1663537-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	95		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 20-21 Batch: WG1663477-2 WG1663477-3								
Naphthalene	69		78		40-140	12		40
Fluorene	70		83		40-140	17		40
Phenanthrene	68		81		40-140	17		40
Anthracene	68		82		40-140	19		40
Pyrene	74		96		26-127	26		40
Benzo(a)anthracene	66		90		40-140	31		40
Chrysene	71		101		40-140	35		40
Benzo(b)fluoranthene	68		90		40-140	28		40
Benzo(a)pyrene	67		90		40-140	29		40
Benzo(ghi)perylene	76		99		40-140	26		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	38		42		23-120
2-Fluorobiphenyl	39		43		15-120
4-Terphenyl-d14	40	Q	46		41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-11,13-16,18-19 Batch: WG1663526-2 WG1663526-3								
Naphthalene	74		80		40-140	8		50
Fluorene	83		84		40-140	1		50
Phenanthrene	76		79		40-140	4		50
Anthracene	81		83		40-140	2		50
Pyrene	79		82		35-142	4		50
Benzo(a)anthracene	84		87		40-140	4		50
Chrysene	80		84		40-140	5		50
Benzo(b)fluoranthene	94		96		40-140	2		50
Benzo(a)pyrene	94		100		40-140	6		50
Benzo(ghi)perylene	85		86		40-140	1		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		84		23-120
2-Fluorobiphenyl	83		84		30-120
4-Terphenyl-d14	93		94		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 12,17 Batch: WG1663537-2 WG1663537-3								
Naphthalene	70		70		40-140	0		50
Fluorene	76		73		40-140	4		50
Phenanthrene	75		73		40-140	3		50
Anthracene	78		75		40-140	4		50
Pyrene	79		75		35-142	5		50
Benzo(a)anthracene	82		80		40-140	2		50
Chrysene	81		79		40-140	3		50
Benzo(b)fluoranthene	87		84		40-140	4		50
Benzo(a)pyrene	91		87		40-140	4		50
Benzo(ghi)perylene	81		78		40-140	4		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		82		23-120
2-Fluorobiphenyl	76		74		30-120
4-Terphenyl-d14	88		82		18-120



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-01

Date Collected: 07/14/22 08:15

Client ID: PB-826-11-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.61	J	mg/kg	4.12	0.220	2	07/15/22 12:45	07/19/22 00:18	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-02
 Client ID: PB-826-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.00	J	mg/kg	4.04	0.216	2	07/15/22 12:45	07/19/22 00:23	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-03

Date Collected: 07/14/22 08:45

Client ID: PB-826-13-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.29		mg/kg	4.12	0.221	2	07/15/22 12:45	07/19/22 22:07	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-04

Date Collected: 07/14/22 09:00

Client ID: PB-826-14-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.32		mg/kg	2.23	0.120	1	07/15/22 12:45	07/18/22 23:46	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-05

Date Collected: 07/14/22 09:15

Client ID: PB-826-15-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	162		mg/kg	2.20	0.118	1	07/15/22 12:45	07/18/22 23:50	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-06

Date Collected: 07/14/22 09:30

Client ID: PB-826-16-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.77		mg/kg	2.22	0.119	1	07/15/22 12:45	07/18/22 23:55	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07

Date Collected: 07/14/22 10:15

Client ID: PB-884-08-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	60.2		mg/kg	4.36	0.234	2	07/15/22 12:45	07/19/22 22:13	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-08

Date Collected: 07/14/22 10:30

Client ID: PB-884-09-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.95	J	mg/kg	1.99	0.107	1	07/15/22 12:45	07/19/22 00:04	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-09

Date Collected: 07/14/22 10:45

Client ID: PB-884-13-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.20		mg/kg	2.13	0.114	1	07/15/22 12:45	07/19/22 00:09	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-10
 Client ID: PB-884-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.63		mg/kg	1.99	0.106	1	07/15/22 12:45	07/19/22 00:14	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-11

Date Collected: 07/14/22 11:15

Client ID: PB-884-15-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.68	J	mg/kg	2.02	0.108	1	07/15/22 12:45	07/19/22 00:46	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-12
 Client ID: PB-884-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.86	J	mg/kg	2.00	0.108	1	07/15/22 12:45	07/19/22 00:51	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-13

Date Collected: 07/14/22 11:45

Client ID: PB-884-17-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.99	J	mg/kg	2.01	0.108	1	07/15/22 12:45	07/19/22 00:56	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-14

Date Collected: 07/14/22 12:00

Client ID: PB-884-18-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.17		mg/kg	4.64	0.248	2	07/15/22 12:45	07/19/22 22:18	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-15
 Client ID: PB-884-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.61	J	mg/kg	2.08	0.112	1	07/15/22 20:44	07/20/22 07:04	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-16

Date Collected: 07/14/22 12:30

Client ID: PB-884-20-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.04	J	mg/kg	2.06	0.110	1	07/15/22 20:44	07/20/22 10:01	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-17

Date Collected: 07/14/22 12:45

Client ID: PB-884-21-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.98	J	mg/kg	2.05	0.110	1	07/15/22 20:44	07/20/22 10:05	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-18
 Client ID: PB-884-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.61	J	mg/kg	2.08	0.112	1	07/15/22 20:44	07/20/22 10:10	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-19

Date Collected: 07/14/22 00:00

Client ID: DUP-44

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.70	J	mg/kg	2.11	0.113	1	07/15/22 20:44	07/20/22 10:15	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-20

Date Collected: 07/14/22 13:05

Client ID: FB-071422-3

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 20:19	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-21

Date Collected: 07/14/22 13:10

Client ID: FB-071422-4

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 21:07	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-14 Batch: WG1663337-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/15/22 12:45	07/18/22 20:58	1,6010D	BV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 15-19 Batch: WG1663364-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/15/22 20:44	07/20/22 06:41	1,6010D	SB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 20-21 Batch: WG1663390-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 18:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237705

Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Metals - Mansfield Lab Associated sample(s): 01-14 Batch: WG1663337-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 15-19 Batch: WG1663364-2 SRM Lot Number: D113-540								
Lead, Total	93		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 20-21 Batch: WG1663390-2								
Lead, Total	102		-		80-120	-		

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1663337-3 QC Sample: L2237664-01 Client ID: MS Sample												
Lead, Total	158	43	113	0	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 15-19 QC Batch ID: WG1663364-3 QC Sample: L2237705-15 Client ID: PB-884-19-SS01												
Lead, Total	1.61J	44.2	25.7	58	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 20-21 QC Batch ID: WG1663390-3 WG1663390-4 QC Sample: L2237672-03 Client ID: MS Sample												
Lead, Total	0.9553J	530	569.8	108		561.0	106		75-125	2		20

Lab Duplicate Analysis *Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237705

Report Date: 07/21/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1663337-4 QC Sample: L2237664-01 Client ID: DUP Sample						
Lead, Total	158	81.4	mg/kg	64	Q	20
Total Metals - Mansfield Lab Associated sample(s): 15-19 QC Batch ID: WG1663364-4 QC Sample: L2237705-15 Client ID: PB-884-19-SS01						
Lead, Total	1.61J	1.98J	mg/kg	NC		20



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

**Lab Serial Dilution
Analysis
Batch Quality Control**

Lab Number: L2237705

Report Date: 07/21/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1663337-6 QC Sample: L2237664-01 Client ID: DUP Sample						
Lead, Total	158	207	mg/kg	31	Q	20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-01
Client ID: PB-826-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:15
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.6		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-02
Client ID: PB-826-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:30
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.5		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-03
 Client ID: PB-826-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-04

Date Collected: 07/14/22 09:00

Client ID: PB-826-14-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-05

Date Collected: 07/14/22 09:15

Client ID: PB-826-15-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.9		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-06

Date Collected: 07/14/22 09:30

Client ID: PB-826-16-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07
Client ID: PB-884-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:15
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-08

Date Collected: 07/14/22 10:30

Client ID: PB-884-09-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-09
Client ID: PB-884-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:45
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.6		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-10

Date Collected: 07/14/22 11:00

Client ID: PB-884-14-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-11

Date Collected: 07/14/22 11:15

Client ID: PB-884-15-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.0		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-12
 Client ID: PB-884-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-13
Client ID: PB-884-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:45
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.6		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-14

Date Collected: 07/14/22 12:00

Client ID: PB-884-18-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-15

Date Collected: 07/14/22 12:15

Client ID: PB-884-19-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-16

Date Collected: 07/14/22 12:30

Client ID: PB-884-20-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-17
Client ID: PB-884-21-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:45
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.1		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-18

Date Collected: 07/14/22 13:00

Client ID: PB-884-23-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.4		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-19

Date Collected: 07/14/22 00:00

Client ID: DUP-44

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Lab Duplicate Analysis
*Batch Quality Control***Project Name:** PHILADELPHIA REFINERY**Project Number:** 200.00135.006**Lab Number:** L2237705**Report Date:** 07/21/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-19 QC Batch ID: WG1663375-1 QC Sample: L2237705-01 Client ID: PB-826-11-SS01						
Solids, Total	92.6	93.4	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent
E	Absent
F	Absent
G	Absent
H	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-01A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-01B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-01C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-01D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-01F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-02A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-02B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-02C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-02D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-02F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-03A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-03B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-03C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-03D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-03F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-04A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-04B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-04C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-04D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-04F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-05A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-05B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-05C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-05D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-05F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-06A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-06B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-06C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-06D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-06F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-07A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2237705-07B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260H(14),PA-8260HLW(14)
L2237705-07C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260H(14),PA-8260HLW(14)
L2237705-07D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-07F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-08A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-08B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-08C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-08D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-08F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-09A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-09B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-09C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-09D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-09F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-10A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-10B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-10C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-10D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-10E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-10F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-11A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-11B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-11C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-11D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-11E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-11F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-12A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-12B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-12C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-12D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-12E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-12F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-13A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-13B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-13C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-13D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-13E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-13F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-14A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-14B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-14C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-14D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-14E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-14F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-15A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-15B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-15C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-15D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-15E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-15F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-16A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-16B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-16C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-16D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-16E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-16F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-17A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-17B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-17C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-17D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-17E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-17F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-18A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-18B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-18C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-18D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-18E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-18F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-19A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-19B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-19C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-19D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-19E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-19F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-20A	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-20B	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-20C	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-20D	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)
L2237705-20E	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)
L2237705-20F	Plastic 250ml HNO3 preserved	E	<2	<2	3.7	Y	Absent		PB-6020T-PPB(180)
L2237705-20G	Amber 250ml unpreserved	E	7	7	3.7	Y	Absent		PA-PAHSIM-LVI(7)
L2237705-20H	Amber 250ml unpreserved	E	7	7	3.7	Y	Absent		PA-PAHSIM-LVI(7)
L2237705-21A	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-21B	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-21C	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-21D	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)
L2237705-21E	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-21F	Plastic 250ml HNO3 preserved	E	<2	<2	3.7	Y	Absent		PB-6020T-PPB(180)
L2237705-21G	Amber 250ml unpreserved	E	7	7	3.7	Y	Absent		PA-PAHSIM-LVI(7)
L2237705-21H	Amber 250ml unpreserved	E	7	7	3.7	Y	Absent		PA-PAHSIM-LVI(7)
L2237705-22A	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-22B	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)

Container Comments

L2237705-19B HEADSPACE

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

PADEP Short List Analytical Suites per Table III-5:

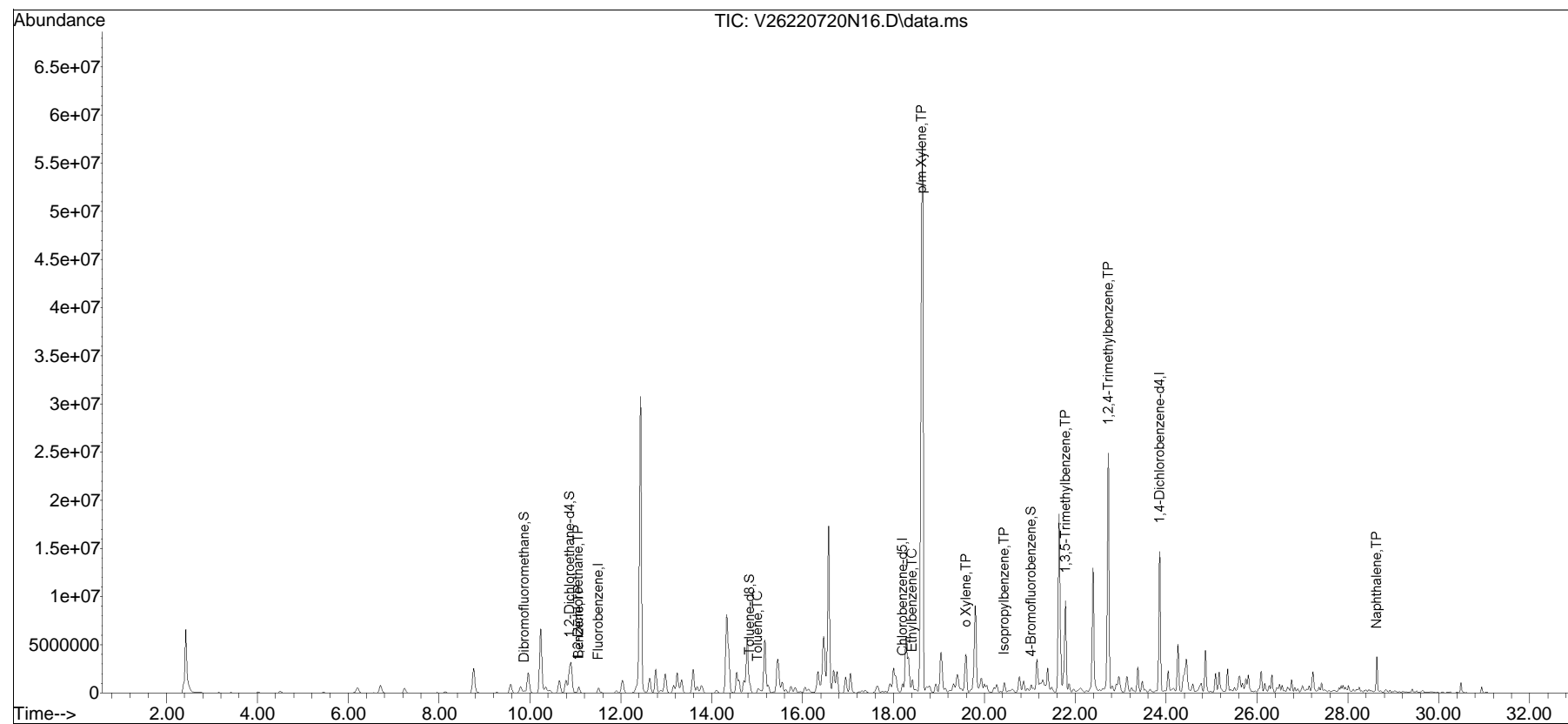
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA126\2022\220720N\
 Data File : V26220720N16.D
 Acq On : 21 Jul 2022 06:20 am
 Operator : VOA126:JC
 Sample : 12237705-07,31,7.23,5,,c,r2f
 Misc : WG1665590,ICAL19172
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: Jul 21 07:18:20 2022
 Quant Method : I:\VOLATILES\VOA126\2022\220720N\V126_220713P_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Jul 14 06:55:13 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20N\V26220720N01.D•

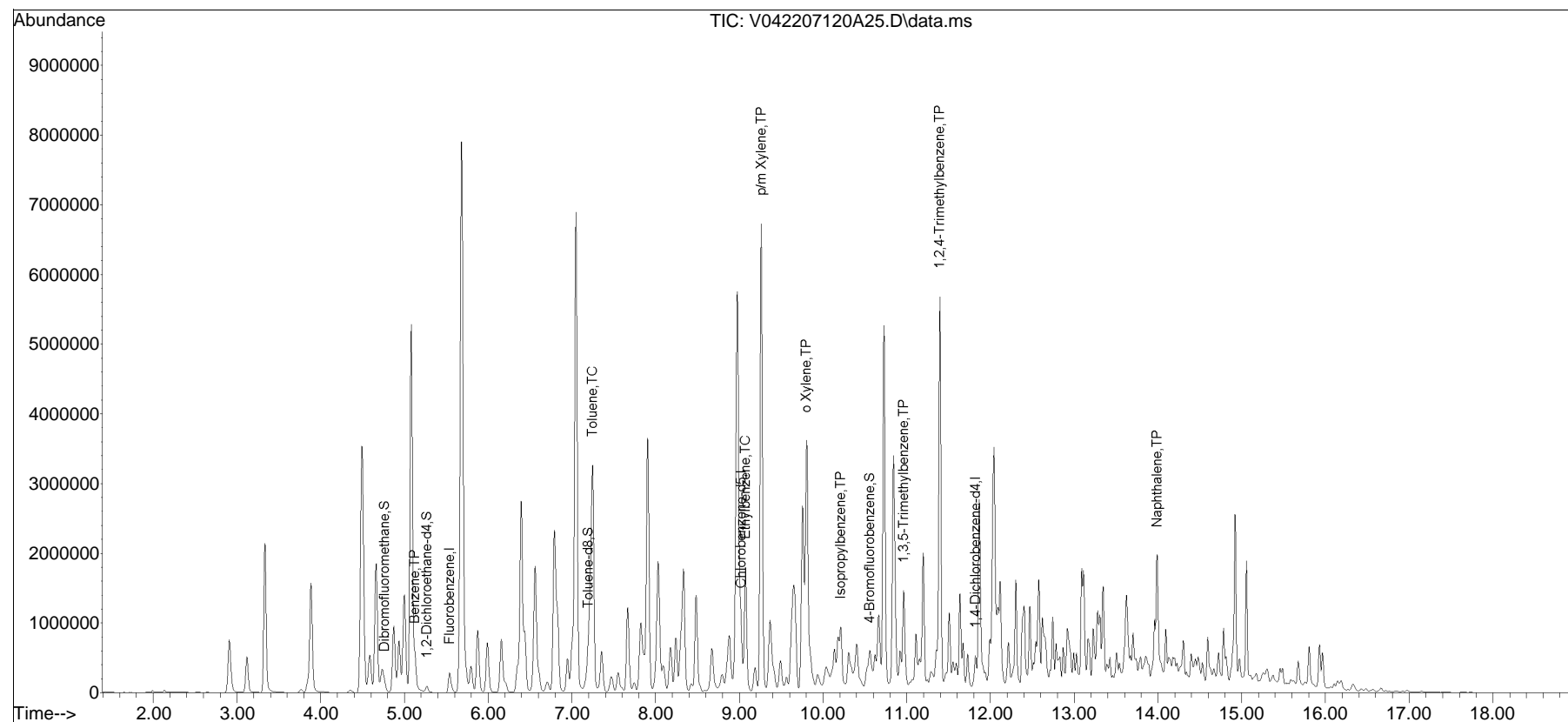


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\2207120A\
Data File : V042207120A25.D
Acq On : 20 Jul 2022 5:38 pm
Operator : VOA104:JC
Sample : L2237705-08,31H,3.97,5,0.100,,A,R2F
Misc : WG1665578,ICAL19119
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Jul 21 06:57:12 2022
Quant Method : I:\VOLATILES\VOA104\2022\2207120A\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list120A\V042207120A01.D•

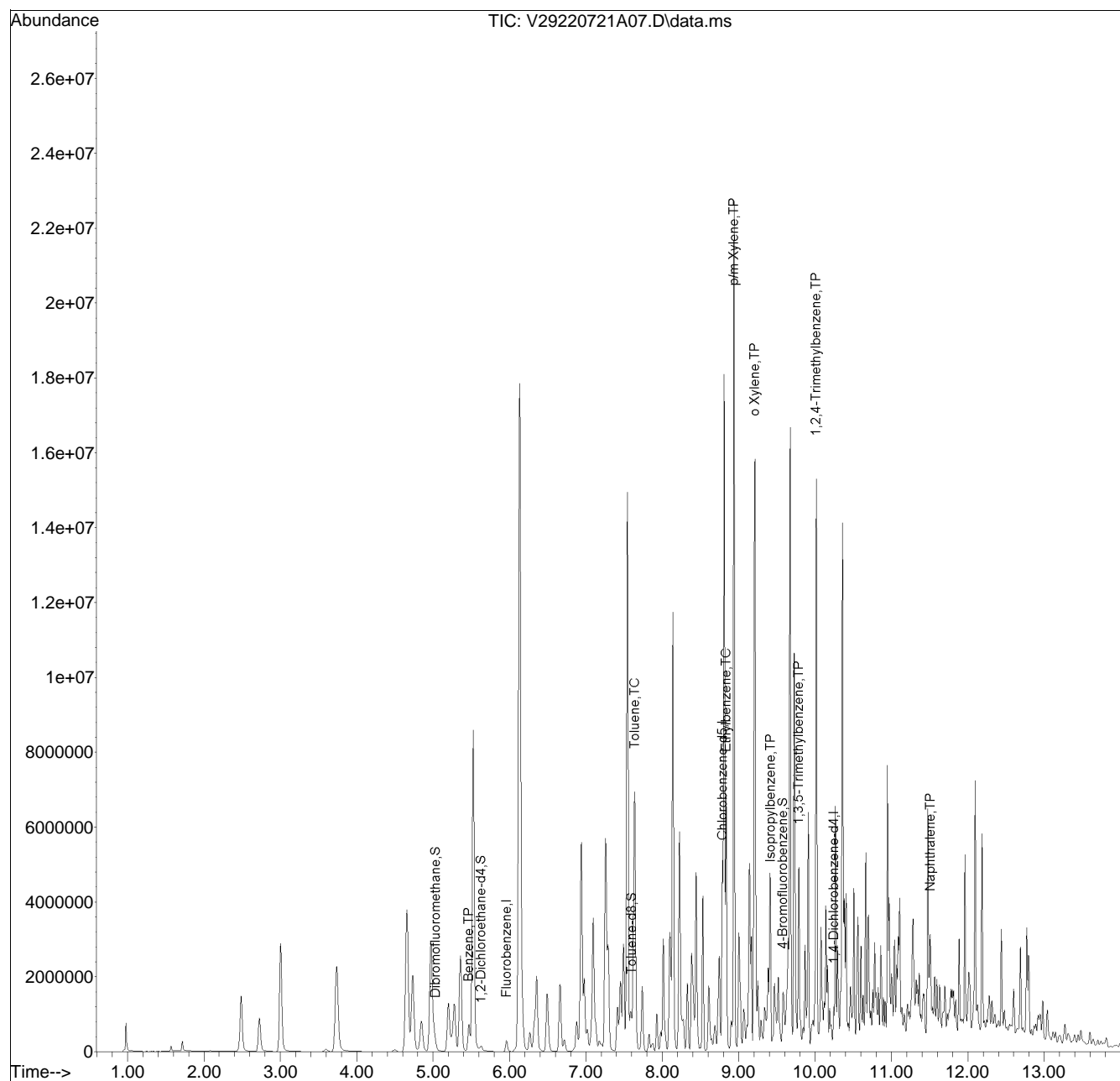


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220721A\
 Data File : V29220721A07.D
 Acq On : 21 Jul 2022 09:34 am
 Operator : VOA129:MKS
 Sample : L2237705-11,31H,4.67,5,0.100,,A,R2F
 Misc : WG1665734,ICAL19173
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jul 21 11:01:20 2022
 Quant Method : I:\VOLATILES\VOA129\2022\220721A\V129_220712N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Jul 14 08:00:36 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list21A\V29220721A01.D•

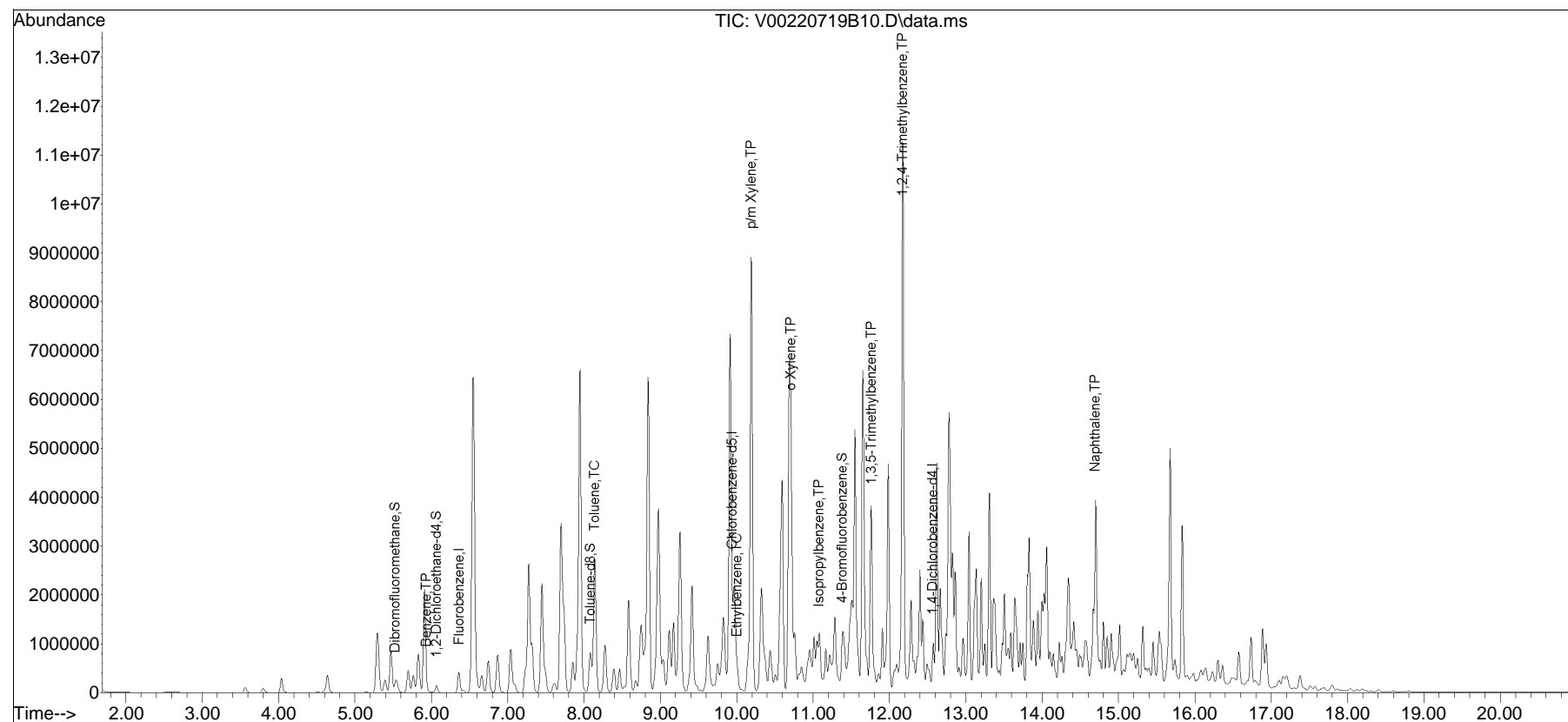


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA100\2022\220719B\
Data File : V00220719B10.D
Acq On : 19 Jul 2022 5:58 pm
Operator : VOA100:JC
Sample : 12237705-19,31h,4.02,5,0.100,,a,r2f
Misc : WG1665199,ICAL19178
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Jul 20 06:13:57 2022
Quant Method : I:\VOLATILES\VOA100\2022\220719B\V100_220714N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Fri Jul 15 08:34:11 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19B\V00220719B01.D•





ANALYTICAL REPORT

Lab Number:	L2237706
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/22/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2237706-01	PB-883-01-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:00	07/14/22
L2237706-02	PB-883-02-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:10	07/14/22
L2237706-03	PB-883-03-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:20	07/14/22
L2237706-04	PB-883-04-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:30	07/14/22
L2237706-05	PB-883-05-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:40	07/14/22
L2237706-06	PB-883-06-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:50	07/14/22
L2237706-07	PB-883-07-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:00	07/14/22
L2237706-08	PB-883-15-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:10	07/14/22
L2237706-09	PB-883-20-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:20	07/14/22
L2237706-10	PB-883-21-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:30	07/14/22
L2237706-11	PB-885-04-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:00	07/14/22
L2237706-12	PB-885-05-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:10	07/14/22
L2237706-13	PB-885-12-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:20	07/14/22
L2237706-14	PB-885-13-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:30	07/14/22
L2237706-15	PB-885-14-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:40	07/14/22
L2237706-16	PB-885-15-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:50	07/14/22
L2237706-17	PB-885-20-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:00	07/14/22
L2237706-18	PB-885-25-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:10	07/14/22
L2237706-19	FB-071422-1	WATER	PHILADELPHIA, PA	07/14/22 14:00	07/14/22
L2237706-20	FB-071422-2	WATER	PHILADELPHIA, PA	07/14/22 14:10	07/14/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Semivolatile Organics by SIM

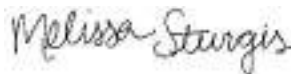
The WG1663477-1 Method Blank, associated with L2237706-19 and -20, has a concentration above the reporting limit for Benzo(b)fluoranthene. Since the associated sample concentrations are either greater than 10x the blank concentration or non-detect to the RL for this target analyte, no corrective action is required. Any results detected below the reporting limit are qualified with a "B".

Total Metals

L2237706-01: The sample has an elevated detection limit due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 07/22/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-01
 Client ID: PB-883-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 22:09
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00032	J	mg/kg	0.0021	0.00021	1
Benzene	0.00026	J	mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00018	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-02
 Client ID: PB-883-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:05
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0018	J	mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-03
 Client ID: PB-883-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 23:03
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0020		mg/kg	0.0016	0.00016	1
Benzene	0.00041		mg/kg	0.00041	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00082	0.00021	1
Toluene	ND		mg/kg	0.00082	0.00045	1
1,2-Dibromoethane	ND		mg/kg	0.00041	0.00024	1
Ethylbenzene	ND		mg/kg	0.00082	0.00012	1
p/m-Xylene	ND		mg/kg	0.0016	0.00046	1
o-Xylene	ND		mg/kg	0.00082	0.00024	1
Xylenes, Total	ND		mg/kg	0.00082	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00082	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-04
 Client ID: PB-883-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 23:30
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-05
 Client ID: PB-883-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 23:57
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0042		mg/kg	0.0018	0.00018	1
Benzene	0.00030	J	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	0.00020	J	mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	0.00084	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.00034	J	mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	76		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-06
 Client ID: PB-883-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 00:23
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00048	J	mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-07
 Client ID: PB-883-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 00:49
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0016	J	mg/kg	0.0023	0.00023	1
Benzene	0.00026	J	mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.00021	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00025	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.00041	J	mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-08
 Client ID: PB-883-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 01:15
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0018	J	mg/kg	0.0019	0.00019	1
Benzene	0.00025	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	0.00030	J	mg/kg	0.00095	0.00028	1
Xylenes, Total	0.00030	J	mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-09
 Client ID: PB-883-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 01:42
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0051		mg/kg	0.0019	0.00019	1
Benzene	0.00045	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.00029	J	mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	0.00048	J	mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	0.00089	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	81		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-10
 Client ID: PB-883-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 02:09
 Analyst: JC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00024	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00034	J	mg/kg	0.00091	0.00013	1
p/m-Xylene	0.0010	J	mg/kg	0.0018	0.00051	1
o-Xylene	0.0013		mg/kg	0.00091	0.00027	1
Xylenes, Total	0.0023	J	mg/kg	0.00091	0.00027	1
Isopropylbenzene	0.00042	J	mg/kg	0.00091	0.00010	1
1,3,5-Trimethylbenzene	0.0032		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.0097		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-11
 Client ID: PB-885-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 02:35
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-12
 Client ID: PB-885-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 03:02
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-13
 Client ID: PB-885-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 03:29
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-14
 Client ID: PB-885-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 03:56
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	75		70-130
Dibromofluoromethane	107		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-15
 Client ID: PB-885-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:31
 Analyst: JC
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00084	0.00022	1
Toluene	ND		mg/kg	0.00084	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	ND		mg/kg	0.00084	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00084	0.00024	1
Xylenes, Total	ND		mg/kg	0.00084	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00084	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-16
 Client ID: PB-885-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 04:49
 Analyst: JC
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	71		70-130
Dibromofluoromethane	108		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-17
 Client ID: PB-885-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 05:16
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-18
 Client ID: PB-885-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 05:43
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	77		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-19
 Client ID: FB-071422-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:23
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-19
 Client ID: FB-071422-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 15:21
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	136	Q	70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-20
 Client ID: FB-071422-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:30
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-20
 Client ID: FB-071422-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 15:43
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	129		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 16:10
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-20 Batch: WG1663450-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/17/22 13:55
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1664113-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	117		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/18/22 21:42
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-14,16-18 Batch: WG1664672-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/19/22 16:38
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,15 Batch: WG1665197-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	99		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237706

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 19-20 Batch: WG1663450-2									
1,2-Dibromoethane	97		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1664113-3 WG1664113-4								
Methyl tert butyl ether	90		86		63-130	5		20
Benzene	86		82		70-130	5		20
1,2-Dichloroethane	100		96		70-130	4		20
Toluene	83		84		70-130	1		20
Ethylbenzene	90		91		70-130	1		20
p/m-Xylene	90		90		70-130	0		20
o-Xylene	90		90		70-130	0		20
Isopropylbenzene	86		87		70-130	1		20
1,3,5-Trimethylbenzene	90		92		64-130	2		20
1,2,4-Trimethylbenzene	89		88		70-130	1		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	117		116		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	109		111		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-14,16-18 Batch: WG1664672-3 WG1664672-4								
Methyl tert butyl ether	90		90		66-130	0		30
Benzene	90		90		70-130	0		30
1,2-Dichloroethane	90		90		70-130	0		30
Toluene	90		92		70-130	2		30
1,2-Dibromoethane	96		98		70-130	2		30
Ethylbenzene	89		90		70-130	1		30
p/m-Xylene	94		96		70-130	2		30
o-Xylene	93		94		70-130	1		30
Isopropylbenzene	72		87		70-130	19		30
1,3,5-Trimethylbenzene	85		87		70-130	2		30
1,2,4-Trimethylbenzene	83		86		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	102		100		70-130
Toluene-d8	98		102		70-130
4-Bromofluorobenzene	83		84		70-130
Dibromofluoromethane	106		105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,15 Batch: WG1665197-3 WG1665197-4								
Methyl tert butyl ether	81		84		66-130	4		30
Benzene	77		80		70-130	4		30
1,2-Dichloroethane	75		78		70-130	4		30
Toluene	71		73		70-130	3		30
1,2-Dibromoethane	79		82		70-130	4		30
Ethylbenzene	72		76		70-130	5		30
p/m-Xylene	73		76		70-130	4		30
o-Xylene	77		80		70-130	4		30
Isopropylbenzene	74		75		70-130	1		30
1,3,5-Trimethylbenzene	74		77		70-130	4		30
1,2,4-Trimethylbenzene	74		77		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	102		101		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-01
 Client ID: PB-883-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 16:36
 Analyst: EK
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-02
 Client ID: PB-883-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 17:01
 Analyst: EK
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	96		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-03
 Client ID: PB-883-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 17:25
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	74		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-04
 Client ID: PB-883-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/21/22 17:18
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/21/22 10:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-05
 Client ID: PB-883-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 18:13
 Analyst: EK
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	91		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-06
 Client ID: PB-883-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 18:37
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	95		30-120
4-Terphenyl-d14	96		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-07
 Client ID: PB-883-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 19:01
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	86		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-08
 Client ID: PB-883-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 19:25
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-09
 Client ID: PB-883-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 19:49
 Analyst: EK
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-10
 Client ID: PB-883-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 20:13
 Analyst: EK
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	3.0		mg/kg	0.18	0.022	1
Fluorene	1.2		mg/kg	0.18	0.018	1
Phenanthrene	3.7		mg/kg	0.11	0.022	1
Anthracene	0.74		mg/kg	0.11	0.036	1
Pyrene	0.23		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	94		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-11
 Client ID: PB-885-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 20:37
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-12
 Client ID: PB-885-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 21:01
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-13
 Client ID: PB-885-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 21:25
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	79		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-14
 Client ID: PB-885-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 21:49
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	67		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-15
 Client ID: PB-885-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 22:13
 Analyst: EK
 Percent Solids: 97%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-16
 Client ID: PB-885-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 22:37
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	88		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-17
 Client ID: PB-885-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 23:01
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	92		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-18
 Client ID: PB-885-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 23:25
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	90		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-19
 Client ID: FB-071422-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 18:40
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	41		23-120
2-Fluorobiphenyl	44		15-120
4-Terphenyl-d14	46		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-20
 Client ID: FB-071422-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 18:56
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	44		23-120
2-Fluorobiphenyl	46		15-120
4-Terphenyl-d14	47		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/20/22 16:29
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1663477-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	0.03	J	ug/l	0.10	0.02
Benzo(a)anthracene	0.05	J	ug/l	0.05	0.02
Chrysene	0.04	J	ug/l	0.10	0.01
Benzo(b)fluoranthene	0.07		ug/l	0.05	0.01
Benzo(a)pyrene	0.04	J	ug/l	0.10	0.02
Benzo(ghi)perylene	0.05	J	ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	34		15-120
4-Terphenyl-d14	32	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/16/22 14:36
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03,05-18 Batch: WG1663537-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	95		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/21/22 09:47
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 07/20/22 17:31

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04 Batch: WG1665398-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		25-120
Phenol-d6	42		10-120
Nitrobenzene-d5	43		23-120
2-Fluorobiphenyl	42		30-120
2,4,6-Tribromophenol	43		10-136
4-Terphenyl-d14	43		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1663477-2 WG1663477-3								
Naphthalene	69		78		40-140	12		40
Fluorene	70		83		40-140	17		40
Phenanthrene	68		81		40-140	17		40
Anthracene	68		82		40-140	19		40
Pyrene	74		96		26-127	26		40
Benzo(a)anthracene	66		90		40-140	31		40
Chrysene	71		101		40-140	35		40
Benzo(b)fluoranthene	68		90		40-140	28		40
Benzo(a)pyrene	67		90		40-140	29		40
Benzo(ghi)perylene	76		99		40-140	26		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	38		42		23-120
2-Fluorobiphenyl	39		43		15-120
4-Terphenyl-d14	40	Q	46		41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03,05-18 Batch: WG1663537-2 WG1663537-3								
Naphthalene	70		70		40-140	0		50
Fluorene	76		73		40-140	4		50
Phenanthrene	75		73		40-140	3		50
Anthracene	78		75		40-140	4		50
Pyrene	79		75		35-142	5		50
Benzo(a)anthracene	82		80		40-140	2		50
Chrysene	81		79		40-140	3		50
Benzo(b)fluoranthene	87		84		40-140	4		50
Benzo(a)pyrene	91		87		40-140	4		50
Benzo(ghi)perylene	81		78		40-140	4		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		82		23-120
2-Fluorobiphenyl	76		74		30-120
4-Terphenyl-d14	88		82		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04 Batch: WG1665398-2 WG1665398-3								
Naphthalene	65		72		40-140	10		50
Fluorene	78		80		40-140	3		50
Phenanthrene	78		78		40-140	0		50
Anthracene	79		80		40-140	1		50
Pyrene	75		76		35-142	1		50
Benzo(a)anthracene	81		79		40-140	3		50
Chrysene	83		82		40-140	1		50
Benzo(b)fluoranthene	76		75		40-140	1		50
Benzo(a)pyrene	83		80		40-140	4		50
Benzo(ghi)perylene	72		74		40-140	3		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	32		36		25-120
Phenol-d6	35		39		10-120
Nitrobenzene-d5	35		38		23-120
2-Fluorobiphenyl	38		38		30-120
2,4,6-Tribromophenol	38		40		10-136
4-Terphenyl-d14	39		39		18-120

METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-01
 Client ID: PB-883-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.61	J	mg/kg	11.4	0.610	5	07/15/22 16:15	07/20/22 11:35	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-02
 Client ID: PB-883-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.88		mg/kg	2.35	0.126	1	07/15/22 16:15	07/19/22 21:45	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-03
 Client ID: PB-883-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.82		mg/kg	4.41	0.236	2	07/15/22 16:15	07/20/22 11:24	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-04
 Client ID: PB-883-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.16		mg/kg	4.50	0.241	2	07/15/22 16:15	07/20/22 12:10	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-05
 Client ID: PB-883-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.72		mg/kg	2.24	0.120	1	07/15/22 16:15	07/19/22 22:31	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-06
 Client ID: PB-883-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.14		mg/kg	2.28	0.122	1	07/15/22 16:15	07/19/22 22:36	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-07
 Client ID: PB-883-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	13.9		mg/kg	2.29	0.123	1	07/15/22 16:15	07/19/22 22:41	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-08
 Client ID: PB-883-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.06		mg/kg	2.27	0.122	1	07/15/22 16:15	07/19/22 22:45	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-09
 Client ID: PB-883-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.73		mg/kg	2.28	0.122	1	07/15/22 16:15	07/19/22 22:50	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-10
 Client ID: PB-883-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	12.6		mg/kg	10.6	0.567	5	07/15/22 16:15	07/20/22 12:15	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-11
 Client ID: PB-885-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.56	J	mg/kg	2.00	0.107	1	07/15/22 16:15	07/19/22 22:59	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-12
 Client ID: PB-885-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.39	J	mg/kg	1.97	0.106	1	07/15/22 16:15	07/19/22 23:04	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-13
 Client ID: PB-885-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.33	J	mg/kg	1.97	0.106	1	07/15/22 16:15	07/19/22 23:08	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-14
 Client ID: PB-885-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.72	J	mg/kg	1.99	0.107	1	07/15/22 16:15	07/19/22 23:13	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-15
 Client ID: PB-885-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.45	J	mg/kg	1.95	0.105	1	07/15/22 16:15	07/19/22 23:36	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-16
 Client ID: PB-885-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.48	J	mg/kg	1.98	0.106	1	07/15/22 16:15	07/19/22 23:40	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-17
 Client ID: PB-885-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.63	J	mg/kg	1.97	0.105	1	07/15/22 16:15	07/19/22 23:45	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-18
 Client ID: PB-885-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.50	J	mg/kg	1.97	0.106	1	07/15/22 16:15	07/20/22 00:26	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-19
 Client ID: FB-071422-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 21:12	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-20
 Client ID: FB-071422-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 21:18	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18 Batch: WG1663362-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/15/22 16:15	07/19/22 21:36	1,6010D	DL

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1663390-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 18:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237706

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-18 Batch: WG1663362-2 SRM Lot Number: D113-540								
Lead, Total	86		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1663390-2								
Lead, Total	102		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1663362-3 QC Sample: L2237706-01 Client ID: PB-883-01-SS01												
Lead, Total	7.61J	48	48.2	100		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1663390-3 WG1663390-4 QC Sample: L2237672-03 Client ID: MS Sample												
Lead, Total	0.9553J	530	569.8	108		561.0	106		75-125	2		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1663362-4 QC Sample: L2237706-01 Client ID: PB-883-01-SS01						
Lead, Total	7.61J	8.10J	mg/kg	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-01
Client ID: PB-883-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-02
Client ID: PB-883-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:10
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.7		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-03
Client ID: PB-883-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:20
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-04
Client ID: PB-883-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-05
Client ID: PB-883-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:40
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.7		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-06
Client ID: PB-883-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:50
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-07
Client ID: PB-883-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:00
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-08
Client ID: PB-883-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:10
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-09
Client ID: PB-883-20-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:20
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-10
Client ID: PB-883-21-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-11
Client ID: PB-885-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.5		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-12
Client ID: PB-885-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:10
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.8		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-13
Client ID: PB-885-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:20
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.0		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-14
Client ID: PB-885-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.6		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-15
Client ID: PB-885-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:40
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.5		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-16
Client ID: PB-885-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:50
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-17
Client ID: PB-885-20-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.3		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-18
Client ID: PB-885-25-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:10
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.4		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1663374-1 QC Sample: L2237706-01 Client ID: PB-883-01-SS01						
Solids, Total	83.2	83.8	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent
E	Absent
F	Absent
G	Absent
H	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-01A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-01B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-01C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-01D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-01F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-02A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-02B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-02C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-02D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-02F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-03A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-03B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-03C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-03D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-03F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-04A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-04B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-04C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-04D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-04F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-05A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-05B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-05C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-05D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-05F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-06A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-06B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-06C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-06D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-06E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-06F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-07A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-07B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-07C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-07D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-07F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-08A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-08B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-08C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-08D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-08E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-08F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-09A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-09B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-09C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-09D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-09E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-09F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-10A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-10B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-10C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-10D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-10E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-10F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-11A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-11B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-11C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-11D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-11E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-11F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-12A	Vial water preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-12B	Vial MeOH preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-12C	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-12D	Plastic 120ml unpreserved	H	NA		2.4	Y	Absent		TS(7)
L2237706-12E	Metals Only-Glass 60mL/2oz unpreserved	H	NA		2.4	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-12F	Glass 120ml/4oz unpreserved	H	NA		2.4	Y	Absent		PA-PAH(14)
L2237706-13A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-13B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-13C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-13D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-13E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-13F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-14A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-14B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-14C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-14D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-14E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-14F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-15A	Vial MeOH preserved	D	NA		5.1	Y	Absent		PA-8260HLW(14)
L2237706-15B	Vial water preserved	D	NA		5.1	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-15C	Vial water preserved	D	NA		5.1	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-15D	Plastic 120ml unpreserved	D	NA		5.1	Y	Absent		TS(7)
L2237706-15E	Metals Only-Glass 60mL/2oz unpreserved	D	NA		5.1	Y	Absent		PB-TI(180)
L2237706-15F	Glass 120ml/4oz unpreserved	D	NA		5.1	Y	Absent		PA-PAH(14)
L2237706-16A	Vial MeOH preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-16B	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-16C	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-16D	Plastic 120ml unpreserved	H	NA		2.4	Y	Absent		TS(7)
L2237706-16E	Metals Only-Glass 60mL/2oz unpreserved	H	NA		2.4	Y	Absent		PB-TI(180)
L2237706-16F	Glass 120ml/4oz unpreserved	H	NA		2.4	Y	Absent		PA-PAH(14)
L2237706-17A	Vial MeOH preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-17B	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-17C	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-17D	Plastic 120ml unpreserved	H	NA		2.4	Y	Absent		TS(7)
L2237706-17E	Metals Only-Glass 60mL/2oz unpreserved	H	NA		2.4	Y	Absent		PB-TI(180)
L2237706-17F	Glass 120ml/4oz unpreserved	H	NA		2.4	Y	Absent		PA-PAH(14)
L2237706-18A	Vial MeOH preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-18B	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-18C	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-18D	Plastic 120ml unpreserved	H	NA		2.4	Y	Absent		TS(7)
L2237706-18E	Metals Only-Glass 60mL/2oz unpreserved	H	NA		2.4	Y	Absent		PB-TI(180)
L2237706-18F	Glass 120ml/4oz unpreserved	H	NA		2.4	Y	Absent		PA-PAH(14)
L2237706-19A	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-19B	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-19C	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-19D	Vial HCl preserved	D	NA		5.1	Y	Absent		8011(14)
L2237706-19E	Vial HCl preserved	D	NA		5.1	Y	Absent		8011(14)
L2237706-19F	Plastic 250ml HNO3 preserved	D	<2	<2	5.1	Y	Absent		PB-6020T-PPB(180)
L2237706-19G	Amber 250ml unpreserved	D	7	7	5.1	Y	Absent		PA-PAHSIM-LVI(7)
L2237706-19H	Amber 250ml unpreserved	D	7	7	5.1	Y	Absent		PA-PAHSIM-LVI(7)
L2237706-20A	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-20B	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-20C	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-20D	Vial HCl preserved	D	NA		5.1	Y	Absent		8011(14)
L2237706-20E	Vial HCl preserved	D	NA		5.1	Y	Absent		8011(14)
L2237706-20F	Plastic 250ml HNO3 preserved	D	<2	<2	5.1	Y	Absent		PB-6020T-PPB(180)
L2237706-20G	Amber 250ml unpreserved	D	7	7	5.1	Y	Absent		PA-PAHSIM-LVI(7)
L2237706-20H	Amber 250ml unpreserved	D	7	7	5.1	Y	Absent		PA-PAHSIM-LVI(7)

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

PADEP Short List Analytical Suites per Table III-5:

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene



ANALYTICAL REPORT

Lab Number:	L2238021
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/22/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2238021-01	PB-884-24-SS01	SOIL	PHILADELPHIA, PA	07/15/22 08:15	07/15/22
L2238021-02	PB-884-25-SS01	SOIL	PHILADELPHIA, PA	07/15/22 08:30	07/15/22
L2238021-03	PB-886-06-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:00	07/15/22
L2238021-04	PB-886-07-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:15	07/15/22
L2238021-05	PB-886-10-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:30	07/15/22
L2238021-06	PB-886-13-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:45	07/15/22
L2238021-07	PB-886-14-SS01	SOIL	PHILADELPHIA, PA	07/15/22 10:00	07/15/22
L2238021-08	PB-886-15-SS01	SOIL	PHILADELPHIA, PA	07/15/22 10:15	07/15/22
L2238021-09	PB-886-19-SS01	SOIL	PHILADELPHIA, PA	07/15/22 10:30	07/15/22
L2238021-10	PB-886-20-SS01	SOIL	PHILADELPHIA, PA	07/15/22 10:45	07/15/22
L2238021-11	PB-191-03-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:00	07/15/22
L2238021-12	DUP-46	SOIL	PHILADELPHIA, PA	07/15/22 00:00	07/15/22
L2238021-13	FB-07152022-2	WATER	PHILADELPHIA, PA	07/15/22 11:15	07/15/22
L2238021-14	FB-07152022-3	WATER	PHILADELPHIA, PA	07/15/22 11:30	07/15/22
L2238021-15	TB-071522	WATER	PHILADELPHIA, PA	07/15/22 00:00	07/15/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2238021-02: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (157%) and 4-bromofluorobenzene (166%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2238021-02D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2238021-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (173%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Total Metals

L2238021-01: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

The WG1664023-3 MS recovery, performed on L2238021-01, is outside the acceptance criteria for lead (38%). A post digestion spike was performed and was within acceptance criteria.

The WG1664023-4 Laboratory Duplicate RPD for lead (21%), performed on L2238021-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/22/22

ORGANICS



VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-01
 Client ID: PB-884-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 11:02
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	0.034		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.095		mg/kg	0.0013	0.00018	1
p/m-Xylene	0.33		mg/kg	0.0025	0.00071	1
o-Xylene	0.032		mg/kg	0.0013	0.00037	1
Xylenes, Total	0.36		mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.030		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.042		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.13		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	76		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-02
 Client ID: PB-884-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 11:29
 Analyst: JC
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	7.1		mg/kg	0.027	0.0090	1
1,2-Dichloroethane	ND		mg/kg	0.054	0.014	1
Toluene	16.	E	mg/kg	0.054	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	9.4		mg/kg	0.054	0.0077	1
p/m-Xylene	29.		mg/kg	0.11	0.030	1
o-Xylene	12.		mg/kg	0.054	0.016	1
Xylenes, Total	41.		mg/kg	0.054	0.016	1
Isopropylbenzene	3.0		mg/kg	0.054	0.0059	1
1,3,5-Trimethylbenzene	3.8		mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	12.		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	157	Q	70-130
4-Bromofluorobenzene	166	Q	70-130
Dibromofluoromethane	70		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-02 D
 Client ID: PB-884-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/21/22 18:41
 Analyst: AJK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Toluene	15.		mg/kg	0.11	0.059	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	129		70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	71		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-03
 Client ID: PB-886-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 16:40
 Analyst: AJK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-04
 Client ID: PB-886-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:12
 Analyst: AJK
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0047	0.00048	1
Benzene	ND		mg/kg	0.0012	0.00039	1
1,2-Dichloroethane	ND		mg/kg	0.0024	0.00061	1
Toluene	ND		mg/kg	0.0024	0.0013	1
1,2-Dibromoethane	ND		mg/kg	0.0012	0.00070	1
Ethylbenzene	ND		mg/kg	0.0024	0.00033	1
p/m-Xylene	ND		mg/kg	0.0047	0.0013	1
o-Xylene	ND		mg/kg	0.0024	0.00069	1
Xylenes, Total	ND		mg/kg	0.0024	0.00069	1
Isopropylbenzene	ND		mg/kg	0.0024	0.00026	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0047	0.00046	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0047	0.00079	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-05
 Client ID: PB-886-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:43
 Analyst: AJK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	0.00053	J	mg/kg	0.0012	0.00035	1
Xylenes, Total	0.00053	J	mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.0014	J	mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.00084	J	mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	173	Q	70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-06
 Client ID: PB-886-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:45
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 18:13
 Analyst: AJK
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0043	0.00043	1
Benzene	ND		mg/kg	0.0011	0.00036	1
1,2-Dichloroethane	ND		mg/kg	0.0021	0.00055	1
Toluene	ND		mg/kg	0.0021	0.0012	1
1,2-Dibromoethane	ND		mg/kg	0.0011	0.00063	1
Ethylbenzene	ND		mg/kg	0.0021	0.00030	1
p/m-Xylene	ND		mg/kg	0.0043	0.0012	1
o-Xylene	ND		mg/kg	0.0021	0.00062	1
Xylenes, Total	ND		mg/kg	0.0021	0.00062	1
Isopropylbenzene	ND		mg/kg	0.0021	0.00023	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0043	0.00041	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0043	0.00072	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-07
 Client ID: PB-886-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 18:43
 Analyst: AJK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00025	1
Benzene	ND		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-08
 Client ID: PB-886-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 19:14
 Analyst: AJK
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00087	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00045	1
Toluene	ND		mg/kg	0.0017	0.00094	1
1,2-Dibromoethane	ND		mg/kg	0.00087	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0035	0.00097	1
o-Xylene	ND		mg/kg	0.0017	0.00051	1
Xylenes, Total	ND		mg/kg	0.0017	0.00051	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-09
 Client ID: PB-886-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 00:14
 Analyst: JC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00027	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-10
 Client ID: PB-886-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:45
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 00:43
 Analyst: JC
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	ND		mg/kg	0.0012	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00070	1
o-Xylene	ND		mg/kg	0.0012	0.00037	1
Xylenes, Total	ND		mg/kg	0.0012	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-11
 Client ID: PB-191-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 01:11
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-12
 Client ID: DUP-46
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 01:40
 Analyst: JC
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0033	0.00033	1
Benzene	ND		mg/kg	0.00083	0.00028	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00043	1
Toluene	ND		mg/kg	0.0017	0.00090	1
1,2-Dibromoethane	ND		mg/kg	0.00083	0.00049	1
Ethylbenzene	ND		mg/kg	0.0017	0.00023	1
p/m-Xylene	ND		mg/kg	0.0033	0.00093	1
o-Xylene	ND		mg/kg	0.0017	0.00048	1
Xylenes, Total	ND		mg/kg	0.0017	0.00048	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00018	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0033	0.00032	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0033	0.00056	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-13
 Client ID: FB-07152022-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/20/22 15:50
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-13
 Client ID: FB-07152022-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 13:28
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	127		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-14
 Client ID: FB-07152022-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/20/22 15:56
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-14
 Client ID: FB-07152022-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 13:55
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	129		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-15
 Client ID: TB-071522
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/20/22 16:03
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-15
 Client ID: TB-071522
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 14:21
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	131	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/20/22 14:35
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 13-15 Batch: WG1664686-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/19/22 09:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03-08 Batch: WG1664964-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/19/22 23:46
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09-12 Batch: WG1665206-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	93		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 07/20/22 08:50
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1665306-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	90		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 02 Batch: WG1665578-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	91		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:41
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 13-15 Batch: WG1665694-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	124		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/21/22 11:39
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 02 Batch: WG1666031-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	86		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238021

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 13-15 Batch: WG1664686-2									
1,2-Dibromoethane	93		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03-08 Batch: WG1664964-3 WG1664964-4								
Methyl tert butyl ether	122		119		66-130	2		30
Benzene	110		103		70-130	7		30
1,2-Dichloroethane	102		100		70-130	2		30
Toluene	108		103		70-130	5		30
1,2-Dibromoethane	109		109		70-130	0		30
Ethylbenzene	107		102		70-130	5		30
p/m-Xylene	109		103		70-130	6		30
o-Xylene	108		103		70-130	5		30
Isopropylbenzene	110		103		70-130	7		30
1,3,5-Trimethylbenzene	107		101		70-130	6		30
1,2,4-Trimethylbenzene	108		102		70-130	6		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		96		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	105		105		70-130
Dibromofluoromethane	93		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09-12 Batch: WG1665206-3 WG1665206-4								
Methyl tert butyl ether	116		115		66-130	1		30
Benzene	107		106		70-130	1		30
1,2-Dichloroethane	98		98		70-130	0		30
Toluene	105		105		70-130	0		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	104		104		70-130	0		30
p/m-Xylene	105		105		70-130	0		30
o-Xylene	105		104		70-130	1		30
Isopropylbenzene	108		108		70-130	0		30
1,3,5-Trimethylbenzene	104		104		70-130	0		30
1,2,4-Trimethylbenzene	105		105		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	106		105		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1665306-3 WG1665306-4								
Methyl tert butyl ether	100		98		66-130	2		30
Benzene	88		84		70-130	5		30
1,2-Dichloroethane	69	Q	66	Q	70-130	4		30
Toluene	88		85		70-130	3		30
1,2-Dibromoethane	85		83		70-130	2		30
Ethylbenzene	85		82		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	92		89		70-130	3		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	104		103		70-130
Dibromofluoromethane	78		77		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 02 Batch: WG1665578-3 WG1665578-4								
Methyl tert butyl ether	100		98		66-130	2		30
Benzene	88		84		70-130	5		30
1,2-Dichloroethane	69	Q	66	Q	70-130	4		30
Toluene	88		85		70-130	3		30
1,2-Dibromoethane	85		83		70-130	2		30
Ethylbenzene	85		82		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	92		89		70-130	3		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	104		103		70-130
Dibromofluoromethane	78		77		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 13-15 Batch: WG1665694-3 WG1665694-4								
Methyl tert butyl ether	87		94		63-130	8		20
Benzene	110		110		70-130	0		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	99		100		70-130	1		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	100		100		70-130	0		20
Isopropylbenzene	91		92		70-130	1		20
1,3,5-Trimethylbenzene	94		95		64-130	1		20
1,2,4-Trimethylbenzene	93		94		70-130	1		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	87		87		70-130
Dibromofluoromethane	110		110		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 02 Batch: WG1666031-3 WG1666031-4								
Methyl tert butyl ether	102		101		66-130	1		30
Benzene	86		86		70-130	0		30
1,2-Dichloroethane	66	Q	66	Q	70-130	0		30
Toluene	90		88		70-130	2		30
1,2-Dibromoethane	84		85		70-130	1		30
Ethylbenzene	86		83		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	89		85		70-130	5		30
Isopropylbenzene	93		91		70-130	2		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	86		85		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	72		74		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	103		104		70-130
Dibromofluoromethane	75		75		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-01
 Client ID: PB-884-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:34
 Analyst: IM
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.082	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.042	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.051	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.048	J	mg/kg	0.12	0.023	1
Chrysene	0.040	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.046	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-02
 Client ID: PB-884-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:58
 Analyst: IM
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	2.1		mg/kg	0.18	0.022	1
Fluorene	0.31		mg/kg	0.18	0.017	1
Phenanthrene	0.53		mg/kg	0.11	0.022	1
Anthracene	0.035	J	mg/kg	0.11	0.035	1
Pyrene	0.048	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.022	J	mg/kg	0.11	0.020	1
Chrysene	0.084	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	122	Q	23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-03
 Client ID: PB-886-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 17:22
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-04
 Client ID: PB-886-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 17:47
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	93		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-05
 Client ID: PB-886-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 12:55
 Analyst: IM
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.041	J	mg/kg	0.18	0.022	1
Fluorene	0.35		mg/kg	0.18	0.017	1
Phenanthrene	0.78		mg/kg	0.11	0.022	1
Anthracene	0.16		mg/kg	0.11	0.034	1
Pyrene	0.049	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	68		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-06
 Client ID: PB-886-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:45
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 13:19
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	52		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-07
 Client ID: PB-886-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:11
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-08
 Client ID: PB-886-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:35
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	95		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-09
 Client ID: PB-886-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 13:44
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-10
 Client ID: PB-886-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:45
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 14:08
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	75		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-11
 Client ID: PB-191-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 14:32
 Analyst: IM
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.16		mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.11	J	mg/kg	0.12	0.023	1
Chrysene	0.10	J	mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.13		mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.12	J	mg/kg	0.17	0.051	1
Indeno(1,2,3-cd)pyrene	0.070	J	mg/kg	0.17	0.029	1
Benzo(ghi)perylene	0.060	J	mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-12
 Client ID: DUP-46
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 14:57
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-13
 Client ID: FB-07152022-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 19:12
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/16/22 08:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.09	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	0.04	J	ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02	1
Chrysene	0.01	J	ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	36		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	45		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-14
 Client ID: FB-07152022-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/22/22 13:35
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/21/22 15:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02	1
Chrysene	0.02	J	ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.04	J	ug/l	0.05	0.01	1
Benzo(a)pyrene	0.02	J	ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	0.03	J	ug/l	0.10	0.01	1
Benzo(ghi)perylene	0.03	J	ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	42		23-120
2-Fluorobiphenyl	41		15-120
4-Terphenyl-d14	39	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/17/22 16:33
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/16/22 08:39

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 13 Batch: WG1663655-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	41		15-120
4-Terphenyl-d14	49		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
 Analytical Date: 07/18/22 11:42
 Analyst: IM

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-12 Batch: WG1663763-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.13	0.023
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D-SIM
 Analytical Date: 07/22/22 12:13
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/21/22 15:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 14 Batch: WG1665807-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	0.01	J	ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	81		15-120
4-Terphenyl-d14	86		41-149

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 13 Batch: WG1663655-2 WG1663655-3								
Naphthalene	80		69		40-140	15		40
Fluorene	83		73		40-140	13		40
Phenanthrene	84		73		40-140	14		40
Anthracene	85		74		40-140	14		40
Pyrene	92		80		26-127	14		40
Benzo(a)anthracene	84		73		40-140	14		40
Chrysene	87		78		40-140	11		40
Benzo(b)fluoranthene	88		85		40-140	3		40
Benzo(a)pyrene	87		76		40-140	13		40
Indeno(1,2,3-cd)pyrene	98		88		40-140	11		40
Benzo(ghi)perylene	97		85		40-140	13		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	40		35		23-120
2-Fluorobiphenyl	42		37		15-120
4-Terphenyl-d14	47		42		41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-12 Batch: WG1663763-2 WG1663763-3								
Naphthalene	68		62		40-140	9		50
Fluorene	71		64		40-140	10		50
Phenanthrene	66		62		40-140	6		50
Anthracene	69		65		40-140	6		50
Pyrene	74		62		35-142	18		50
Benzo(a)anthracene	71		66		40-140	7		50
Chrysene	71		66		40-140	7		50
Benzo(b)fluoranthene	74		67		40-140	10		50
Benzo(a)pyrene	78		62		40-140	23		50
Indeno(1,2,3-cd)pyrene	74		76		40-140	3		50
Benzo(ghi)perylene	66		65		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	76		70		23-120
2-Fluorobiphenyl	71		65		30-120
4-Terphenyl-d14	80		66		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 14 Batch: WG1665807-2 WG1665807-3								
Naphthalene	84		79		40-140	6		40
Fluorene	89		86		40-140	3		40
Phenanthrene	88		82		40-140	7		40
Anthracene	90		81		40-140	11		40
Pyrene	89		77		26-127	14		40
Benzo(a)anthracene	90		84		40-140	7		40
Chrysene	89		82		40-140	8		40
Benzo(b)fluoranthene	92		85		40-140	8		40
Benzo(a)pyrene	90		84		40-140	7		40
Indeno(1,2,3-cd)pyrene	99		93		40-140	6		40
Benzo(ghi)perylene	97		91		40-140	6		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	84		78		23-120
2-Fluorobiphenyl	84		75		15-120
4-Terphenyl-d14	88		73		41-149



METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-01
 Client ID: PB-884-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	45.9		mg/kg	11.7	0.626	5	07/18/22 08:15	07/18/22 17:41	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-02

Date Collected: 07/15/22 08:30

Client ID: PB-884-25-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.11		mg/kg	2.13	0.114	1	07/18/22 08:15	07/18/22 18:17	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-03

Date Collected: 07/15/22 09:00

Client ID: PB-886-06-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.26		mg/kg	2.20	0.118	1	07/18/22 08:15	07/18/22 18:22	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-04
 Client ID: PB-886-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.62		mg/kg	2.23	0.119	1	07/18/22 08:15	07/18/22 18:27	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-05
 Client ID: PB-886-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.97	J	mg/kg	2.11	0.113	1	07/18/22 08:15	07/18/22 18:31	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-06

Date Collected: 07/15/22 09:45

Client ID: PB-886-13-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.04		mg/kg	2.26	0.121	1	07/18/22 08:15	07/18/22 18:36	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-07

Date Collected: 07/15/22 10:00

Client ID: PB-886-14-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.16	J	mg/kg	2.18	0.117	1	07/18/22 08:15	07/18/22 18:41	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-08

Date Collected: 07/15/22 10:15

Client ID: PB-886-15-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.56		mg/kg	2.20	0.118	1	07/18/22 08:15	07/18/22 18:46	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-09

Date Collected: 07/15/22 10:30

Client ID: PB-886-19-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.28		mg/kg	2.24	0.120	1	07/18/22 08:15	07/18/22 18:51	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-10

Date Collected: 07/15/22 10:45

Client ID: PB-886-20-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.19	J	mg/kg	2.22	0.119	1	07/18/22 08:15	07/18/22 18:55	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-11
 Client ID: PB-191-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	19.8		mg/kg	2.41	0.129	1	07/18/22 08:15	07/18/22 19:00	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-12

Date Collected: 07/15/22 00:00

Client ID: DUP-46

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.04	J	mg/kg	2.14	0.115	1	07/18/22 08:15	07/18/22 19:14	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-13

Date Collected: 07/15/22 11:15

Client ID: FB-07152022-2

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 19:59	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-14

Date Collected: 07/15/22 11:30

Client ID: FB-07152022-3

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 20:57	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-12 Batch: WG1664023-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/18/22 08:15	07/18/22 16:10	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 13-14 Batch: WG1664131-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 18:48	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-12 Batch: WG1664023-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 13-14 Batch: WG1664131-2								
Lead, Total	104		-		80-120	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-12 QC Batch ID: WG1664023-3 QC Sample: L2238021-01 Client ID: PB-884-24-SS01												
Lead, Total	45.9	51.2	65.5	38	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 13-14 QC Batch ID: WG1664131-3 QC Sample: L2237200-07 Client ID: MS Sample												
Lead, Total	ND	530	528.2	100		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238021

Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-12 QC Batch ID: WG1664023-4 QC Sample: L2238021-01 Client ID: PB-884-24-SS01						
Lead, Total	45.9	37.0	mg/kg	21	Q	20
Total Metals - Mansfield Lab Associated sample(s): 13-14 QC Batch ID: WG1664131-4 QC Sample: L2237200-07 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238021-01

Date Collected: 07/15/22 08:15

Client ID: PB-884-24-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238021-02

Date Collected: 07/15/22 08:30

Client ID: PB-884-25-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238021-03

Date Collected: 07/15/22 09:00

Client ID: PB-886-06-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.7		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-04

Date Collected: 07/15/22 09:15

Client ID: PB-886-07-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-05
 Client ID: PB-886-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.5		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-06

Date Collected: 07/15/22 09:45

Client ID: PB-886-13-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.9		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238021-07

Date Collected: 07/15/22 10:00

Client ID: PB-886-14-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.2		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-08

Date Collected: 07/15/22 10:15

Client ID: PB-886-15-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.1		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-09

Date Collected: 07/15/22 10:30

Client ID: PB-886-19-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.9		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-10

Date Collected: 07/15/22 10:45

Client ID: PB-886-20-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.6		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-11

Date Collected: 07/15/22 11:00

Client ID: PB-191-03-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.2		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-12

Date Collected: 07/15/22 00:00

Client ID: DUP-46

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238021

Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-12 QC Batch ID: WG1663681-1 QC Sample: L2237931-01 Client ID: DUP Sample						
Solids, Total	82.6	82.0	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238021-01A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-01B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-01C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-01D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-01E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-01F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-02A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-02B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-02C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-02D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-02E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-02F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-03A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-03B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-03C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-03D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-03E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-03F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-04A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-04B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-04C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238021-04D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-04E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-04F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-05A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-05B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-05C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-05D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-05E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-05F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-06A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-06B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-06C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-06D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-06E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-06F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-07A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-07B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-07C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-07D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-07E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-07F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-08A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2238021-08B	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-08C	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-08D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2238021-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2238021-08F	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		PA-PAH(14)
L2238021-09A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238021-09B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-09C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-09D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-09E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-09F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-10A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-10B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-10C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-10D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-10E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-10F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-11A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-11B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-11C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-11D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-11E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-11F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-12A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-12B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-12C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-12D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-12E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-12F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-13A	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-13B	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-13C	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-13D	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238021-13E	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238021-13F	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238021-13G	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238021-13H	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		PB-6020T-PPB(180)
L2238021-14A	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-14B	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-14C	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-14D	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238021-14E	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238021-14F	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238021-14G	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238021-14H	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		PB-6020T-PPB(180)
L2238021-15A	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-15B	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-15C	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238021-15D	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY PAGE 2 of 2



Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
 Address: 2127 Hamilton Avenue
 Trenton, NJ 08619
 Phone: 215-901-4974

Fax: Standard Rush (ONLY IF PRE-APPROVED)
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
2021-01	PB-141-03-5501	7/15	1100	S	TS
72	DUP-46		-	S	TS
73	FB-071522-2		1115	W	TS
74	FB-071522-3		1130	W	TS
75	TB-071522		-	W	TS

Project Information

Project Name: Philadelphia Refinery
 Project Location: Philadelphia, PA
 Project #: 200.00135.006
 Project Manager: William Schmidt
 ALPHA Quote #: 18599

Turn-Around Time

Date Rec'd in Lab: 7/16/22 ALPHA Job #: L2238021

Report Information **Data Deliverables** **Billing Information**
 FAX EMAIL Same as Client info PO #: 3562
 ADEX Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program: Criteria:

ANALYSIS

ANALYSIS																SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed Preservation <input type="checkbox"/> Lab to do <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
SHORTLIST 1-6																	
SHORTLIST 1-6																	
VOC PORTION OF SLI-6																	
EDB (8011)																	
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Container Type: G Preservative:

Relinquished By: *[Signature]* Date/Time: 7/15/22 15:15
 Received By: *[Signature]* Date/Time: 7/15/22 15:15
 7/15/22 15:15 7/15/22 2350

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

PADEP Short List Analytical Suites per Table III-5:

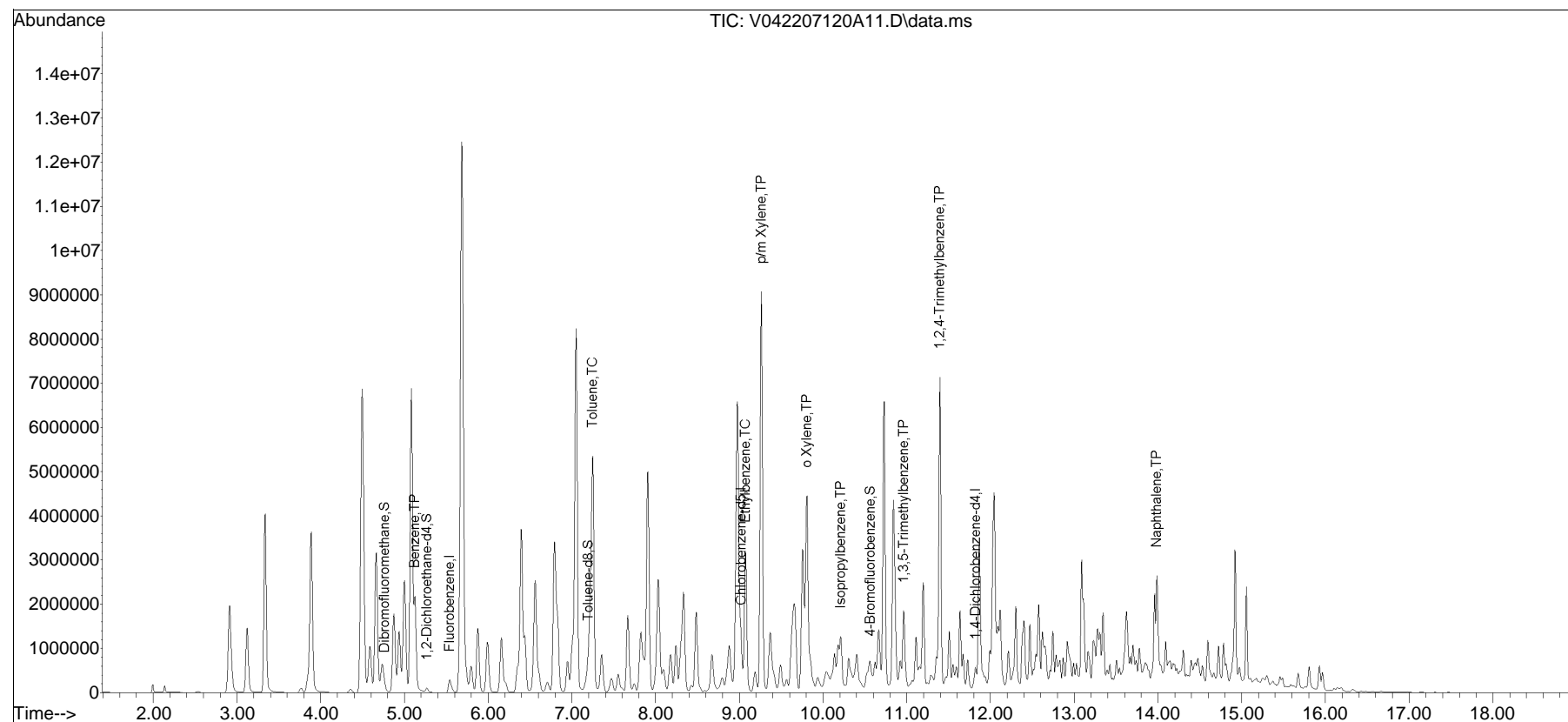
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\2207120A\
Data File : V042207120A11.D
Acq On : 20 Jul 2022 11:29 am
Operator : VOA104:JC
Sample : L2238021-02,31H,5.41,5,0.100,,A,R2F
Misc : WG1665578,ICAL19119
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Jul 21 07:02:24 2022
Quant Method : I:\VOLATILES\VOA104\2022\2207120A\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list120A\V042207120A01.D•

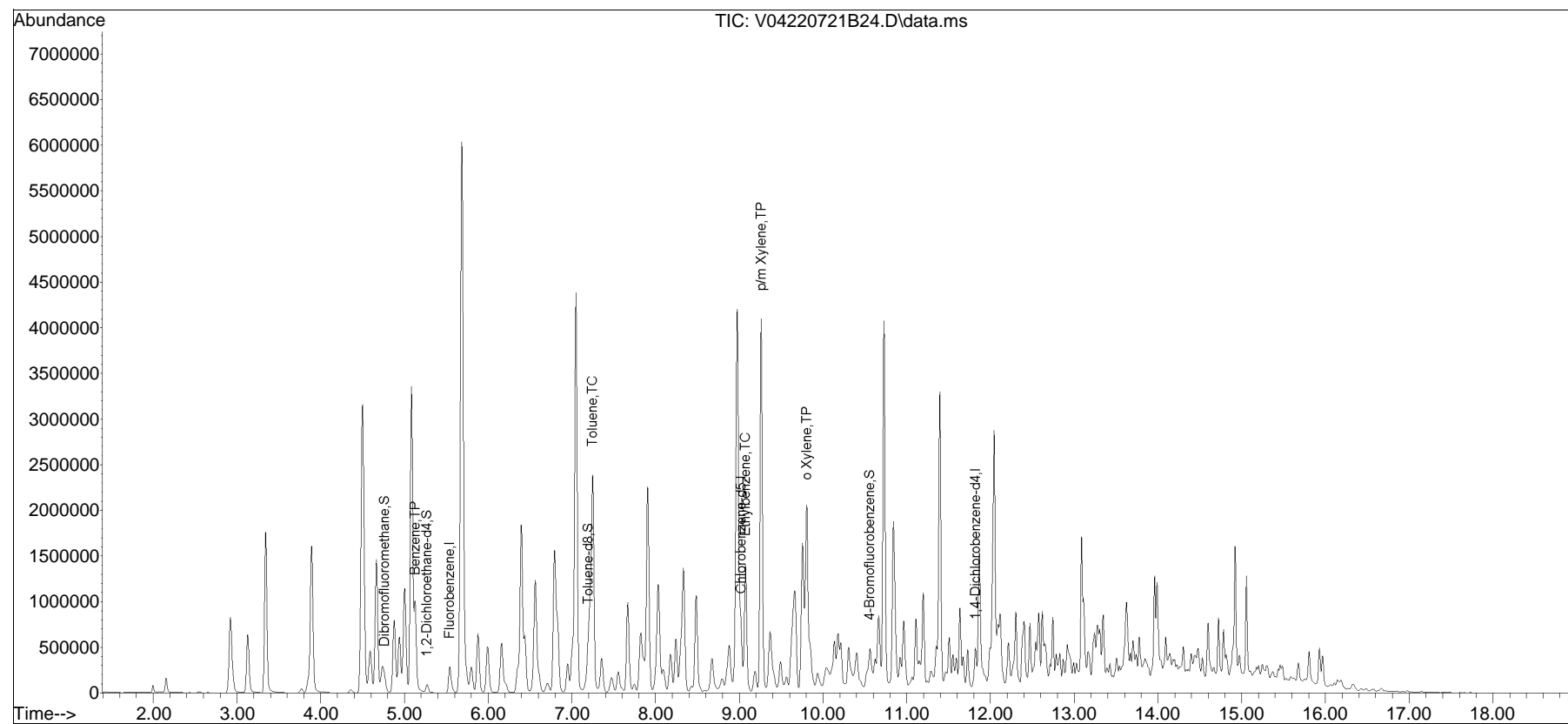


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220721B\
Data File : V04220721B24.D
Acq On : 21 Jul 2022 6:41 pm
Operator : VOA104:AJK
Sample : L2238021-02D,31H,5.42,5,0.050,,A,R2F
Misc : WG1666031,ICAL19119
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Jul 21 23:27:34 2022
Quant Method : I:\VOLATILES\VOA104\2022\220721B\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-BTEX - Standard BTEX List20721B\V04220721B04.D•

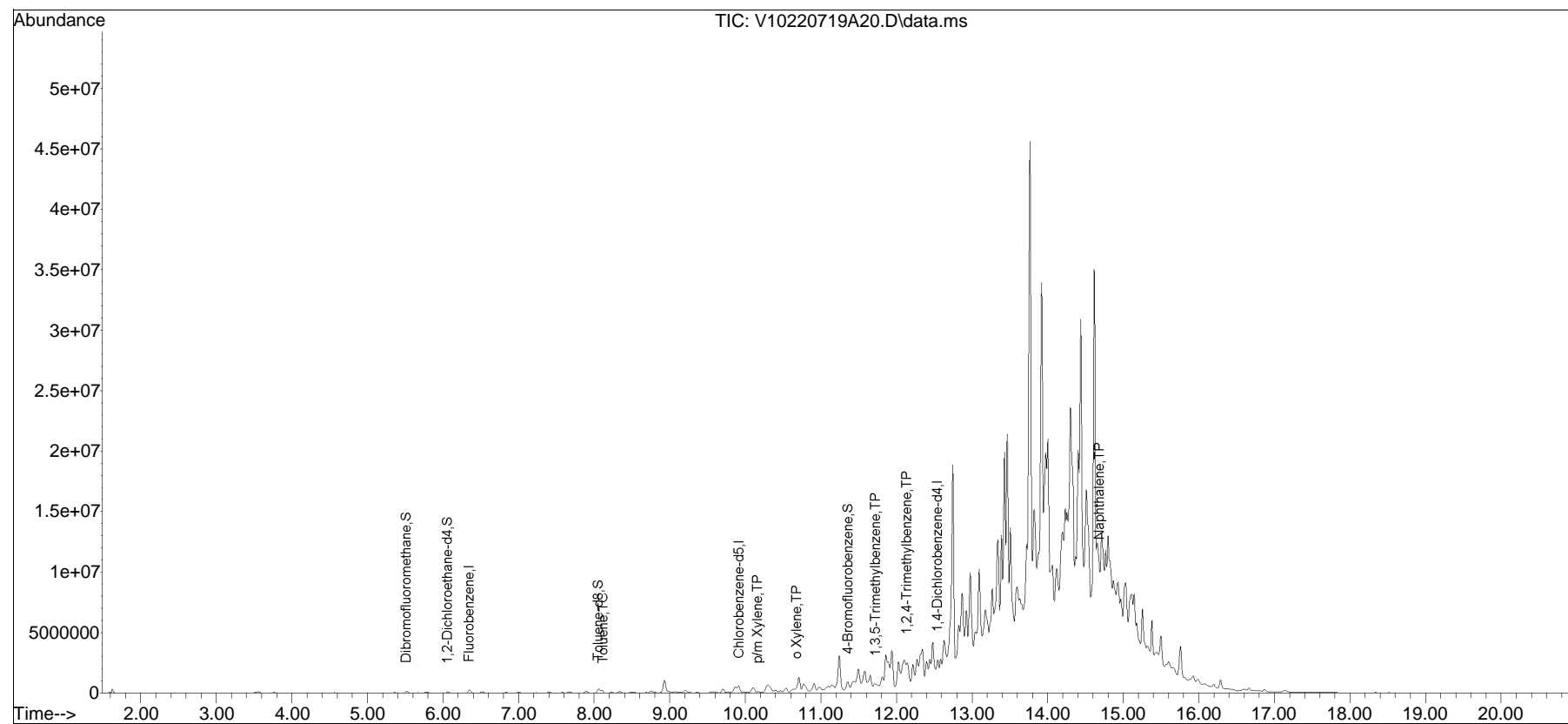


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220719A\
Data File : V10220719A20.D
Acq On : 19 Jul 2022 5:43 pm
Operator : VOA110:AJK
Sample : 12238021-05,31,4.51,5,,b,r2f
Misc : WG1664964,ICAL18890
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Jul 19 18:10:44 2022
Quant Method : I:\VOLATILES\VOA110\2022\220719A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19A\V10220719A01.D•





ANALYTICAL REPORT

Lab Number:	L2238022
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/22/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2238022-01	PB-885-17-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:00	07/15/22
L2238022-02	PB-885-18-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:10	07/15/22
L2238022-03	PB-885-19-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:20	07/15/22
L2238022-04	PB-885-24-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:30	07/15/22
L2238022-05	PB-886-16-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:00	07/15/22
L2238022-06	PB-886-17-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:10	07/15/22
L2238022-07	PB-886-21-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:20	07/15/22
L2238022-08	PB-886-22-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:30	07/15/22
L2238022-09	PB-886-23-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:40	07/15/22
L2238022-10	PB-886-25-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:50	07/15/22
L2238022-11	DUP-45	SOIL	PHILADELPHIA, PA	07/15/22 00:00	07/15/22
L2238022-12	FB-071522-1	WATER	PHILADELPHIA, PA	07/15/22 14:00	07/15/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Case Narrative (continued)

Report Submission

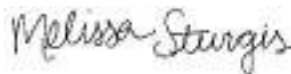
All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1664025-3 MS recovery, performed on L2238022-01, is outside the acceptance criteria for lead (54%). A post digestion spike was performed and yielded an unacceptable recovery for lead (53%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 07/22/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-01
 Client ID: PB-885-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 10:21
 Analyst: NLK
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00041	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00082	0.00021	1
Toluene	ND		mg/kg	0.00082	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00041	0.00024	1
Ethylbenzene	ND		mg/kg	0.00082	0.00012	1
p/m-Xylene	ND		mg/kg	0.0016	0.00046	1
o-Xylene	ND		mg/kg	0.00082	0.00024	1
Xylenes, Total	ND		mg/kg	0.00082	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00082	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-02
 Client ID: PB-885-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 10:52
 Analyst: NLK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-03
 Client ID: PB-885-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 11:23
 Analyst: NLK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00049	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-04
 Client ID: PB-885-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 11:55
 Analyst: NLK
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-05
 Client ID: PB-886-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 12:28
 Analyst: NLK
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00049	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-06
 Client ID: PB-886-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 12:59
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00012	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.00082	J	mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.0025		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-07
 Client ID: PB-886-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 13:30
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-08
 Client ID: PB-886-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 14:01
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-09
 Client ID: PB-886-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:40
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 14:34
 Analyst: AJK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-10
 Client ID: PB-886-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:50
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 15:06
 Analyst: AJK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-11
 Client ID: DUP-45
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 15:37
 Analyst: AJK
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-12
 Client ID: FB-071522-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 14:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/20/22 16:10
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-12
 Client ID: FB-071522-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 14:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 14:47
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	134	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/20/22 14:35
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 12 Batch: WG1664686-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/19/22 09:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-11 Batch: WG1664964-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:41
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 12 Batch: WG1665694-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	124		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits	<i>Column</i>
Microextractables by GC - Westborough Lab Associated sample(s): 12 Batch: WG1664686-2									
1,2-Dibromoethane	93		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-11 Batch: WG1664964-3 WG1664964-4								
Methyl tert butyl ether	122		119		66-130	2		30
Benzene	110		103		70-130	7		30
1,2-Dichloroethane	102		100		70-130	2		30
Toluene	108		103		70-130	5		30
1,2-Dibromoethane	109		109		70-130	0		30
Ethylbenzene	107		102		70-130	5		30
p/m-Xylene	109		103		70-130	6		30
o-Xylene	108		103		70-130	5		30
Isopropylbenzene	110		103		70-130	7		30
1,3,5-Trimethylbenzene	107		101		70-130	6		30
1,2,4-Trimethylbenzene	108		102		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		96		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	105		105		70-130
Dibromofluoromethane	93		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 12 Batch: WG1665694-3 WG1665694-4								
Methyl tert butyl ether	87		94		63-130	8		20
Benzene	110		110		70-130	0		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	99		100		70-130	1		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	100		100		70-130	0		20
Isopropylbenzene	91		92		70-130	1		20
1,3,5-Trimethylbenzene	94		95		64-130	1		20
1,2,4-Trimethylbenzene	93		94		70-130	1		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	87		87		70-130
Dibromofluoromethane	110		110		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-01
 Client ID: PB-885-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:21
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	72		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-02
 Client ID: PB-885-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:45
 Analyst: IM
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-03
 Client ID: PB-885-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:10
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	79		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-04
 Client ID: PB-885-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:00
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	87		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-05
 Client ID: PB-886-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:24
 Analyst: IM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	86		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-06
 Client ID: PB-886-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:48
 Analyst: IM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.092	J	mg/kg	0.19	0.023	1
Fluorene	0.046	J	mg/kg	0.19	0.019	1
Phenanthrene	0.13		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	84		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-07
 Client ID: PB-886-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 20:12
 Analyst: IM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-08
 Client ID: PB-886-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 20:37
 Analyst: IM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-09
 Client ID: PB-886-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:40
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:01
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 23:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	49		30-120
4-Terphenyl-d14	60		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-10
 Client ID: PB-886-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:50
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:25
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 23:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	64		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-11
 Client ID: DUP-45
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:48
 Analyst: IM
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 23:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	77		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-12
 Client ID: FB-071522-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 14:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 19:44
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/16/22 08:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	26		23-120
2-Fluorobiphenyl	28		15-120
4-Terphenyl-d14	34	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/17/22 16:33
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/16/22 08:39

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 12 Batch: WG1663655-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	41		15-120
4-Terphenyl-d14	49		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/18/22 11:42
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-08 Batch: WG1663763-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/18/22 16:15
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 07/16/22 23:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 09-11 Batch: WG1663766-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	81		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238022

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 12 Batch: WG1663655-2 WG1663655-3								
Naphthalene	80		69		40-140	15		40
Fluorene	83		73		40-140	13		40
Phenanthrene	84		73		40-140	14		40
Anthracene	85		74		40-140	14		40
Pyrene	92		80		26-127	14		40
Benzo(a)anthracene	84		73		40-140	14		40
Chrysene	87		78		40-140	11		40
Benzo(b)fluoranthene	88		85		40-140	3		40
Benzo(a)pyrene	87		76		40-140	13		40
Benzo(ghi)perylene	97		85		40-140	13		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	40		35		23-120
2-Fluorobiphenyl	42		37		15-120
4-Terphenyl-d14	47		42		41-149

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-08 Batch: WG1663763-2 WG1663763-3								
Naphthalene	68		62		40-140	9		50
Fluorene	71		64		40-140	10		50
Phenanthrene	66		62		40-140	6		50
Anthracene	69		65		40-140	6		50
Pyrene	74		62		35-142	18		50
Benzo(a)anthracene	71		66		40-140	7		50
Chrysene	71		66		40-140	7		50
Benzo(b)fluoranthene	74		67		40-140	10		50
Benzo(a)pyrene	78		62		40-140	23		50
Benzo(ghi)perylene	66		65		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	76		70		23-120
2-Fluorobiphenyl	71		65		30-120
4-Terphenyl-d14	80		66		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238022

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 09-11 Batch: WG1663766-2 WG1663766-3								
Naphthalene	66		56		40-140	16		50
Fluorene	69		61		40-140	12		50
Phenanthrene	68		61		40-140	11		50
Anthracene	70		64		40-140	9		50
Pyrene	67		68		35-142	1		50
Benzo(a)anthracene	69		63		40-140	9		50
Chrysene	68		61		40-140	11		50
Benzo(b)fluoranthene	70		62		40-140	12		50
Benzo(a)pyrene	70		63		40-140	11		50
Benzo(ghi)perylene	69		62		40-140	11		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	99		98		23-120
2-Fluorobiphenyl	64		56		30-120
4-Terphenyl-d14	71		79		18-120

METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-01

Date Collected: 07/15/22 09:00

Client ID: PB-885-17-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.53	J	mg/kg	2.21	0.118	1	07/18/22 08:55	07/21/22 08:31	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-02

Date Collected: 07/15/22 09:10

Client ID: PB-885-18-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.49	J	mg/kg	2.06	0.110	1	07/18/22 08:55	07/21/22 09:50	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-03

Date Collected: 07/15/22 09:20

Client ID: PB-885-19-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.93	J	mg/kg	2.13	0.114	1	07/18/22 08:55	07/21/22 09:54	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-04

Date Collected: 07/15/22 09:30

Client ID: PB-885-24-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.63	J	mg/kg	2.16	0.116	1	07/18/22 08:55	07/21/22 09:59	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-05

Date Collected: 07/15/22 11:00

Client ID: PB-886-16-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.82	J	mg/kg	2.13	0.114	1	07/18/22 08:55	07/21/22 10:04	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-06

Date Collected: 07/15/22 11:10

Client ID: PB-886-17-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.80	J	mg/kg	2.27	0.122	1	07/18/22 08:55	07/21/22 10:09	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-07
 Client ID: PB-886-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.82	J	mg/kg	2.23	0.120	1	07/18/22 08:55	07/21/22 10:14	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-08

Date Collected: 07/15/22 11:30

Client ID: PB-886-22-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.06	J	mg/kg	2.24	0.120	1	07/18/22 08:55	07/21/22 10:51	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-09

Date Collected: 07/15/22 11:40

Client ID: PB-886-23-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.95	J	mg/kg	2.21	0.118	1	07/18/22 08:55	07/21/22 10:56	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-10

Date Collected: 07/15/22 11:50

Client ID: PB-886-25-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.81	J	mg/kg	2.18	0.117	1	07/18/22 08:55	07/21/22 11:01	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-11
 Client ID: DUP-45
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.24		mg/kg	2.16	0.116	1	07/18/22 08:55	07/21/22 11:06	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-12

Date Collected: 07/15/22 14:00

Client ID: FB-071522-1

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 21:02	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-11 Batch: WG1664025-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/18/22 08:55	07/21/22 08:08	1,6010D	SB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 12 Batch: WG1664131-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 18:48	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 Batch: WG1664025-2 SRM Lot Number: D113-540								
Lead, Total	93		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 12 Batch: WG1664131-2								
Lead, Total	104		-		80-120	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1664025-3 QC Sample: L2238022-01 Client ID: PB-885-17-SS01												
Lead, Total	1.53J	47.1	25.4	54	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1664131-3 QC Sample: L2237200-07 Client ID: MS Sample												
Lead, Total	ND	530	528.2	100		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238022

Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1664025-4 QC Sample: L2238022-01 Client ID: PB-885-17-SS01						
Lead, Total	1.53J	1.44J	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1664131-4 QC Sample: L2237200-07 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-01
Client ID: PB-885-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:00
Date Received: 07/15/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.1		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-02
 Client ID: PB-885-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.2		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-03
Client ID: PB-885-19-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:20
Date Received: 07/15/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.2		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238022-04

Date Collected: 07/15/22 09:30

Client ID: PB-885-24-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.7		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-05

Date Collected: 07/15/22 11:00

Client ID: PB-886-16-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238022-06

Date Collected: 07/15/22 11:10

Client ID: PB-886-17-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-07

Date Collected: 07/15/22 11:20

Client ID: PB-886-21-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.9		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-08

Date Collected: 07/15/22 11:30

Client ID: PB-886-22-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-09
 Client ID: PB-886-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:40
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.6		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-10
 Client ID: PB-886-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:50
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.1		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-11

Date Collected: 07/15/22 00:00

Client ID: DUP-45

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238022

Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-11 QC Batch ID: WG1663682-1 QC Sample: L2238022-01 Client ID: PB-885-17-SS01						
Solids, Total	87.1	89.0	%	2		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238022-01A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-01B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-01C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-01D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-01F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-02A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-02B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-02C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-02D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-02F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-03A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-03B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-03C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-03D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-03F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-04A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-04B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-04C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238022-04D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-04F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-05A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2238022-05B	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-05C	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-05D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2238022-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2238022-05F	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		PA-PAH(14)
L2238022-06A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2238022-06B	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-06C	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-06D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2238022-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2238022-06F	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		PA-PAH(14)
L2238022-07A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2238022-07B	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-07C	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-07D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2238022-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2238022-07F	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		PA-PAH(14)
L2238022-08A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-08B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-08C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-08D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-08F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-09A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238022-09B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-09C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-09D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-09E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-09F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-10A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-10B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-10C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-10D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-10F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-11A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-11B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-11C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-11D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-11F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-12A	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238022-12B	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238022-12C	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238022-12D	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238022-12E	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238022-12F	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238022-12G	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238022-12H	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		PB-6020T-PPB(180)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2



Westborough, MA
 TEL: 508-896-9220
 FAX: 508-896-9193

Mansfield, MA
 TEL: 508-822-9300
 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
 Address: 2127 Hamilton Avenue
 Trenton, NJ 08619
 Phone: 215-901-4974

Fax: Standard Rush (ONLY IF PRE-APPROVED)
 Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
38022-01	PB-885-17-5501	7/15/22	900	S	a
-02	PB-885-18-5501		910		
-03	PB-885-19-5501		920		
-04	PB-885-24-5501		930		
-05	PB-886-16-5501		1100		
-06	PB-886-17-5501		1110		
-07	PB-886-21-5501		1120		
-08	PB-886-22-5501		1130		
-09	PB-886-23-5501		1140		
-10	PB-886-25-5501	✓	1150	✓	✓

Date Rec'd in Lab: 7/16/22

ALPHA Job #: L2238022

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

Short list 1-5	SAMPLE HANDLING																TOTAL # BOTTLES	
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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/>	<																

PADEP Short List Analytical Suites per Table III-5:

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

Appendix G

Soil Boring Logs and Monitoring Well Installation Logs



Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-191-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/09/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/09/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB191-01		57.2	0-5.0' Black sandy FILL with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-191-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/09/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/09/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB191-02		44.7	0-5.0' Black sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-191-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB191-03	4.30	0.0	0-5.0' Brown SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-191-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/09/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/09/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 1.5-2.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB191-04		130.2	0-5.0' Black sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-191-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/09/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/09/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.5-4.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB191-05		15.7	0-5.0' Brown sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-191-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/09/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/09/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 0.5-1.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB191-06		42.9	0-5.0' Black sandy FILL with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-191-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/09/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/09/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB191-07		50.7	0-5.0' Black SILT with brown SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-191-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/09/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/09/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB191-08		101.5	0-5.0' Brown/gray SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-01
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 3.0-3.5'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-01		0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-02
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 3.0-3.5'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-02		0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-03
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 3.0-3.5'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-03		0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-04
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 3.0-3.5'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-04		0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-05
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 3.0-3.5'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-05		0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-06
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 3.0-3.5'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-06		0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
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14					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-07
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 3.0-3.5'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-07		0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
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Ransom Consulting, Inc.		Soil Boring Log			Boring No.: PB-826-08	
Client: PESRM				Page 1 of 1		
Project Name: PES Refinery				Date Start: 07/13/2022		
Project No.: 200.00135		Location: Philadelphia, PA		Date Finish: 07/13/2022		
Drilling Contractor: TPI				Permit No.:		
Driller:		Drilling Method: Geoprobe		Ground Elevation: N/A		
Hole Diameter: 2"		Sampling Method: Acetate Liner		Datum: N/A		
Logged By: Tyler Short		Sample Interval: 4.5-5.0'		Total Depth: 5.0'		
				Hammer wt./fall: N/A		
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks	
1	PB826-08		0.0	0-5.0' Brown SILT		
2			0.0			
3			0.0			
4			16.2			
5			44.7			
			50.2			
			60.3			
			85.6			
			122.8			
6				END OF BORING (5 ft.)		
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
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18						
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-09
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 4.5-5.0'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-09		0.0	0-5.0' Brown SILT	
2			0.0		
3			0.0		
4			17.2		
5			39.2		
			185.6		
			252.3		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-10
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 3.0-3.5'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-10		0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-11
Client: PESRM		Project Name: PES Refinery		Page 1 of 1
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A
		Sample Interval: 3.0-3.5'		Datum: N/A
				Total Depth: 5.0'
				Hammer wt./fall: N/A

Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-11	4.80	0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-12	4.00	0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
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22					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-13	5.00	0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
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15					
16					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-14	3.60	0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
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15					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-15	5.00	0.0	0-5.0' Brown SILT with some coarse SAND	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-826-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB826-16	4.50	0.0	0-5.0' Brown SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-01		0.0	0-5.0' Brown gravelly SAND	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-02		0.0	0-5.0' Brown silty FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-03		0.0	0-5.0' Gray silty FILL	
2			9.2		
3			5.7		
4			2.2		
5			35.7		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-04		0.0	0-5.0' Brown sandy FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-05		0.0	0-5.0' Brown sandy FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-06		10.2	0-5.0' Brown/gray silty FILL	
2			0.0		
3			5.2		
4			0.2		
5			70.1		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-07		0.0	0-5.0' Brown silty FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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22					
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24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-08		0.0	0-5.0' Gray silty FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-09		27.2	0-4.0' Brown SILT	
2			0.0		
3			17.8		
4			25.3		
5			282.8	4.0-5.0' Brown fine SAND	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-10		0.0	0-5.0' Brown/gray SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 2.5-3.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-11		0.0	0-5.0' Brown silty FILL	
2			19.2		
3			299.8		
4			65.6		
5			78.1		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-12		0.0	0-5.0' Brown silty FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-13		0.0	0-5.0' Brown sandy FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-14		0.0	0-5.0' Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-15		0.0	0-5.0' Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-840-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB840-16		0.0	0-5.0' Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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21					
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24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-01		0.0	0-5.0 Black course sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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22					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-02		0.0	0-5.0 Black course sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-03		0.0	0-5.0 Black sandy FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-04		0.0	0-5.0 Black course SAND	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-05		0.0	0-4.0 Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0	4.0-5.0 Brown SILT	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-06		0.0	0-5.0 Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-07		0.0	0-5.0 Light brown silty SAND	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-08		0.0	0-4.0 Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0	4.0-5.0 Brown SILT	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-09		0.0	0-5.0 Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-10		0.0	0-4.0 Brown sandy FILL	
2			0.0		
3			0.0		
4			9.3		
5			12.5	4.0-5.0 Brown silty fine SAND	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-11		0.0	0-4.0 Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.7	4.0-5.0 Brown SILT	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-12		0.0	0-4.0 Brown sandy FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0	4.0-5.0 Brown SILT	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-13		0.0	0-5.0 Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-841-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB841-14		0.0	0-5.0 Brown sandy FILL with SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-01		0.0	0-4.0 Brown sandy FILL with GRAVEL	
2			0.0		
3			0.0		
4			28.7		
5			14.6		
6				4.0-5.0 Brown sandy FILL with SILT	
7				END OF BORING (5 ft.)	
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-02		0.0	0-5.0 Brown sandy FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-03		0.0	0-5.0 Brown sandy FILL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-04		0.0	0-5.0 Brown sandy FILL with SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-05		8.4	0-3.0 Brown sandy FILL	
2			3.7		
3			11.0		
4			0.0	3.0-5.0 Gray silty FILL	
5			0.0		
6			END OF BORING (5 ft.)		
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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19					
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21					
22					
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24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-06		0.7	0-4.0 Brown sandy FILL	
2			2.1		
3			9.5		
4			10.2		
5			23.5		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
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22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 2.0-2.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-07		0.0	0-2.0 Brown sandy FILL with GRAVEL	
2			58.7	2.0-3.0 Brown/black sandy FILL with SILT	
3			20.7	3.0-5.0 Brown/black SILT	
4			13.2		
5			12.7		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-08		0.0	0-3.0 Brown sandy FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-09		0.0	0-2.0 Brown sandy FILL with GRAVEL	
2			0.0	2.0-4.0 Gray sandy SILT	
3			7.8		
4			29.2	4.0-5.0 Brown sandy FILL	
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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21					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-10		0.0	0-2.0 Brown sandy FILL	
2			10.4	2.0-5.0 Gray FILL with coarse SAND	
3			14.2		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-11		0.0	0-5.0 Brown/gray SILT with SAND	
2			0.3		
3			0.5		
4			0.7		
5			2.5		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-12		1.0	0-2.0 Brown sandy FILL with GRAVEL	
2			5.8	2.0-4.0 Gray SILT with some SAND	
3			8.4		
4			11.3		
5			2.3	4.0-5.0 Brown SILT with SAND	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
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22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-13		0.0	0-5.0 Brown sandy FILL with SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-14		0.0	0-3.0 Brown sandy FILL with GRAVEL	
2			0.0		
3			2.8	3.0-5.0 Gray SILT with fine SAND	
4			8.3		
5			7.5		
6			END OF BORING (5 ft.)		
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-15		0.0	0-4.0 Brown sandy FILL	
2			0.0		
3			0.0		
4			5.8		
5			7.9	4.0-5.0 Gray SILT with fine SAND	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
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14					
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16					
17					
18					
19					
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22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-16		0.0	0-4.0 Brown silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-843-17	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB843-17		0.0	0-3.0 Brown sandy FILL with SILT	
2			0.5		
3			0.2	3.0-5.0 Gray SILT with some SAND	
4			2.8		
5			3.5		
6			END OF BORING (5 ft.)		
7					
8					
9					
10					
11					
12					
13					
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15					
16					
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22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-01		0.0	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-02		0.0	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
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21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-03		321.2	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-04		0.0	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-05		192.3	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.5-4.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-06		64.1	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-07		394.1	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-08		0.0	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-09		130.2	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-10		0.0	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-11		0.0	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-12		121.5	0-5.0' Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-13		411.6	0-5.0' Black/brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.5-4.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-14		213.2	0-5.0' Black/brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-15		292.5	0-5.0' Black/brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-16		0.0	0-5.0' Black/brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-847-17	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/8/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/8/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.5-4.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB847-17		636.3	0-5.0' Black/brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-01		0.0	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-02		0.0	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-03		0.0	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-04		1321	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-05		123.2	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-06		1202	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-07		819.3	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-08		19.3	0-5.0 Brown SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
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15					
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21					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-09		10.1	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
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23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-10		165.0	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-11		1609	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-12		1421	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-13		192.2	0-3.0 Brown SILT	
2					
3					
4					
5					
6				3.0-5.0 Black CLAY	
7				END OF BORING (5 ft.)	
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-14		14.9	0-3.0 Brown SILT	
2					
3					
4					
5					
6				3.0-5.0 Black CLAY	
7				END OF BORING (5 ft.)	
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-15		1682	0-3.0 Brown SILT	
2					
3					
4					
5					
6				3.0-5.0 Black CLAY	
7				END OF BORING (5 ft.)	
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-16		0.0	0-5.0 Brown sandy SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-17	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-17		0.0	0-5.0 Black FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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20					
21					
22					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-848-18	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/11/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/11/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB848-18		1381	0-5.0 Black FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-01		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-02		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
22					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-03		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 2.0-2.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-04		0.0	0-5.0 Brown SILT	
2			61.3		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-05		0.0	0-5.0 Brown SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-06		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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22					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-07		0.0	0-5.0 Brown sandy SILT with some gravel	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-08		0.0	0-5.0 Brown/black sandy SILT	
2			0.0		
3			14.1		
4			112.3		
5			101.2		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-09		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-10		0.0	0-5.0 Brown sandy SILT with some gravel	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-11		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-12		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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19					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-13		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-14		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-15		0.0	0-5.0 Brown SILT	
2			0.0		
3			13.1		
4			152.3		
5			161.8		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
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21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-16		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-17	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-17		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-881-18	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/12/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/12/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB881-18		0.0	0-5.0 Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/29/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/29/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-01	4.25	0.0	0-5.0' Orange course SAND	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/29/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/29/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-02	4.75	0.0	0-5.0' Orange course SAND	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-03		0.0	0-5.0' Brown tan sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-04		0.0	0-5.0' Brown tan sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-05		0.0	0-5.0' Brown tan sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-06		0.0	0-5.0' Brown tan sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-07		0.0	0-5.0' Brown tan sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-08		0.0	0-5.0' Brown sandy SILT	
2			0.0		
3			13.1		
4			161.3		
5			151.4		
6		130.6		END OF BORING (5 ft.)	
7		131.8			
8		1228			
9		1080			
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.5-4.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-09		0.0	0-5.0' Brown sandy SILT	
2			0.0		
3			12.1		
4			139.3		
5			200.8		
			222.6		
			402.1		
			404.3		
			300.2		
			322.2		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/30/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 07/30/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
		Hammer wt./fall: N/A			
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-10		679.1	0-5.0' Course SAND with SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-11		0.0	0-5.0' Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-12		0.0	0-5.0' Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/13/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/13/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-13		0.0	0-5.0' Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/30/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 07/30/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-14		83.2	0-5.0' Brown SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/30/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 07/30/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-15		1.2	0-5.0' Brown/gray SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/30/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 07/30/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-16		507.3	0-5.0' Brown SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-17	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/30/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 07/30/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-17		13.3	0-5.0' Brown/gray SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-18	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/30/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 07/30/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-18		1.4	0-5.0' Brown/gray SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-19	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/30/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 07/30/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-19		12.7	0-5.0' Brown SILT with SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-882-20	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/30/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 07/30/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB882-20		35.8	0-5.0' Brown/gray SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-01	4.50	0.0	0.0-5.0' Brown sandy SILT	
			0.0		
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-02	4.50	0.0	0.0-5.0' Brown sandy SILT	
			0.0		
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-03	4.50	0.0	0.0-5.0' Brown sandy SILT	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-04	5.00	0.0	0.0-5.0' Brown sandy SILT	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-05	4.50	0.0	0.0-5.0' Brown sandy SILT with little GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-06	4.50	0.0	0.0-5.0' Brown sandy SILT	
			1.6		
			1.7		
2			0.0		
			13.2		
3			13.1		
			132.1		
4			1011.1		
			1202		
5			422.2		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-07	5.00	0.0	0.0-5.0' Brown sandy SILT	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-08			0.0-5.0' Brown/gray SILT with fine SAND	
2					
3					
4			10.5		
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-09		30.9	0.0-5.0' Brown/gray SILT with fine SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-10		23.7	0.0-5.0' Brown/brown/gray SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.5-4.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-11		200.2	0.0-5.0' Black/brown SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-12		0.0	0.0-5.0' Light brown SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-13		43.3	0.0-5.0' Black/gray SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-14		0.0	0.0-5.0' Gray SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
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22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-15	5.00	0.0	0.0-5.0' Brown sandy SILT	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5	0.0				
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-16	
Client: PESRM				Page 1 of 1	
Project Name: PES Refinery				Date Start: 12/08/2021	
Project No.: 200.00135		Location: Philadelphia, PA		Date Finish: 12/08/2021	
Drilling Contractor: TPI				Permit No.:	
Driller:		Drilling Method: Geoprobe		Ground Elevation: N/A	
Hole Diameter: 2"		Sampling Method: Acetate Liner		Datum: N/A	
Logged By: Tyler Short		Sample Interval: 3.0-3.5'		Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-16		5.7	0.0-5.0' Brown SILT with fine SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-17	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-17		0.0	0.0-5.0' Brown FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-18	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-18		0.0	0.0-5.0' Brown sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-19	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-19		72.8	0.0-5.0' Black sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-20	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-20	5.00	0.0	0.0-5.0' Brown sandy SILT	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-21	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-21	5.00	0.0	0.0-5.0' Brown sandy SILT	
			0.0		
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-22	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-22		0.0	0.0-5.0' Gray SILT with CLAY	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-23	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-23		62.3	0.0-5.0' Black sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-883-24	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/08/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/08/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB883-23		0.0	0.0-5.0' Gray/brown SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/03/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/03/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-01		0.0	0-1.0 Topsoil	
2				1.0-5.0 Brown SILT	
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/03/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/03/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-02		0.0	0-1.0 Brown SAND and SILT	
2				1.0-5.0 Light gray/brown SAND and SILT	
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-03	
Client: PESRM				Page 1 of 1	
Project Name: PES Refinery				Date Start: 12/03/2021	
Project No.: 200.00135		Location: Philadelphia, PA		Date Finish: 12/03/2021	
Drilling Contractor: TPI				Permit No.:	
Driller:		Drilling Method: Geoprobe		Ground Elevation: N/A	
Hole Diameter: 2"		Sampling Method: Acetate Liner		Datum: N/A	
Logged By: Tyler Short		Sample Interval: 3.0-3.5'		Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-03		0.0	0-2.0 FILL	
2				2.0-5.0 Light brown SILT	
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/03/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/03/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-04		0.0	0-1.0 Topsoil with some GRAVEL	
2				2.0-5.0 Brown/gray SILT with some CLAY	
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-05		0.0	0-5.0 Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.5-4.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-06		23.2	0-5.0 Brown/gray SILT with SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-07		0.0	0-5.0 Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-08	3.30	0.0	0-4.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			7.0		
5			12.7		
			15.9	4.0-5.0' Brown Silt	
			55.3		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-09	3.30	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-10		0.0	0-5.0 Sandy FILL with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/03/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/03/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-11		0.0	0-5.0 Brown SILT with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/03/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/03/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-12		0.0	0-5.0 Brown SILT with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-13	3.60	0.0	0-5.0' Brown Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
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14					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-14	3.00	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-15	4.80	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
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14					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-16	5.00	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-17	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-17	4.10	0.0	0-4.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				4.0-5.0' Brown Silt with coarse Sand	
END OF BORING (5 ft.)					
6					
7					
8					
9					
10					
11					
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14					
15					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-18	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-18	4.10	0.0	0-4.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.5	4.0-5.0' Brown Silt	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
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16					
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18					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-19	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-19	4.30	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-20	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-20	4.30	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-21	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-21	4.80	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-22	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-22		0.0	0-5.0 Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-23	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-23	4.80	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-24	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-24	4.30	0.0	0-4.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
				4.0-5.0' Brown SILT with coarse SAND	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-25	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-25	4.58	0.0	0-4.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
5			7.2	4.0-5.0' Brown SILT	
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-26	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-26		0.0	0-5.0 Brown SAND with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-27	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/03/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/03/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-27		0.0	0-5.0 Brown SILT with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
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22					
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24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-28	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/03/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/03/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-28		0.0	0-5.0 Brown SILT with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
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15					
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17					
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25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-884-29	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/03/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/03/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB884-29		0.0	0-5.0 Brown SILT with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
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21					
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23					
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25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-01		0.0	0-5.0 Brown fine SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-02		0.0	0-5.0 Brown fine SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-03		0.0	0-5.0 Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-04	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-04	4.50	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-05	4.50	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/07/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/07/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-06		0.0	0.0-5.0' Brown sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-07		0.0	0-5.0 Brown medium SAND with SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-08		0.0	0-5.0 Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-09		0.0	0-5.0 Brown SILT with CLAY	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-10		0.0	0-5.0 Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-11		0.0	0-5.0 Brown SILT with SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-12	4.00	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-13	4.00	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
			0.0		
5			0.0		
			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-14	4.50	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-15	4.50	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/06/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/06/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-16		0.0	0-5.0 Brown fine SAND with SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-17	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-17	4.00	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-18	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-18	4.50	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-19	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-19	4.00	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-20	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-20	4.50	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-21	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/07/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/07/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-21		0.0	0.0-5.0' Brown sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-22	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/07/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/07/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-22		0.0	0.0-5.0' Brown SILT with fine SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-23	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/07/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/07/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-23		0.0	0.0-5.0' Brown sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-24	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-24	3.50	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-25	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/14/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/14/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-25	4.00	0.0	0.0-5.0' Brown sandy SILT with some GRAVEL	
			0.0		
2			0.0		
			0.0		
3			0.0		
			0.0		
4			0.0		
5	0.0				
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-885-26	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 12/07/2021	
Drilling Contractor: TPI		Driller:		Date Finish: 12/07/2021	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB885-26		0.0	0.0-5.0' Brown sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-01	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-01		2.3	0-5.0' Brown fine Sand with SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-02	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-02		5.7	0-5.0' Brown fine Sand with SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-03	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-03		4.2	0-5.0' Brown fine Sand with SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-04	
Client: PESRM				Page 1 of 1	
Project Name: PES Refinery				Date Start: 10/07/2022	
Project No.: 200.00135		Location: Philadelphia, PA		Date Finish: 10/07/2022	
Drilling Contractor: TPI				Permit No.:	
Driller:		Drilling Method: Geoprobe		Ground Elevation: N/A	
Hole Diameter: 2"		Sampling Method: Acetate Liner		Datum: N/A	
Logged By: Tyler Short		Sample Interval: 3.0-3.5'		Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-04		7.1	0-5.0' Brown fine Sand with SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-05	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-05		3.9	0-5.0' Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-06	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-06	3.30	0.0	0-5.0' Tan silty FILL with SAND and GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-07	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-07	4.3	0.0	0-5.0' Tan silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-08	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.5-5.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-08		32.7	0-5.0' Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-09	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-09		15.6	0-5.0' Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-10	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-10	3.00	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-11	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.5-4.0'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-11		77.9	0-5.0' Sandy FILL with STONE	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-12	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 4.0-4.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-12		136.8	0-5.0' Gray SILT	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-13	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-13	3.75	0.0	0-5.0' Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-14	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-14	4.16	0.0	0-5.0 Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-15	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-15	4.00	0.0	0-5.0 Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-16	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-16	4.00	0.0	0-5.0' Brown sandy SILT with some GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-17	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-17	4.50	0.0	0-5.0' Brown sandy SILT with some GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-18	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-18		12.1	0-5.0' Brown sandy FILL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-19	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-19	4.16	0.0	0-5.0 Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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18					
19					
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21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-20	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-20	4.30	0.0	0-5.0 Tan Silty FILL with GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
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21					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-21	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-21	4.50	0.0	0-5.0' Brown sandy SILT with some GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
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25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-22	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-22	4.00	0.0	0-5.0' Brown sandy SILT with some GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-23	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-23	4.00	0.0	0-5.0' Brown sandy SILT with some GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
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14					
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Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-24	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-24		11.5	0-5.0' Brown fine SAND	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-25	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 07/15/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 07/15/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-25	4.00	0.0	0-5.0' Brown sandy SILT with some GRAVEL	
2			0.0		
3			0.0		
4			0.0		
5			0.0		
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					




Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-26	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-26		15.7	0-5.0' Brown SAND with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					

Ransom Consulting, Inc.		Soil Boring Log		Boring No.: PB-886-27	
Client: PESRM		Project Name: PES Refinery		Page 1 of 1	
Project No.: 200.00135		Location: Philadelphia, PA		Date Start: 10/07/2022	
Drilling Contractor: TPI		Driller:		Date Finish: 10/07/2022	
Hole Diameter: 2"		Drilling Method: Geoprobe		Permit No.:	
Logged By: Tyler Short		Sampling Method: Acetate Liner		Ground Elevation: N/A	
		Sample Interval: 3.0-3.5'		Datum: N/A	
				Total Depth: 5.0'	
				Hammer wt./fall: N/A	
Depth (ft)	Sample No.	Recovery (Feet)	PID/FID (ppm)	Lithologic Description	Remarks
1	PB886-27		5.8	0-5.0' Brown SAND with GRAVEL	
2					
3					
4					
5					
6				END OF BORING (5 ft.)	
7					
8					
9					
10					
11					
12					
13					
14					
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16					
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18					
19					
20					
21					
22					
23					
24					
25					

Project: **PESRM AST Closure**
 Project Location: **3144 Passyunk Ave**
 Project Number: **P044.001.002**

Log of Boring PB-847-15R
Sheet 1 of 2


Date(s) Drilled 1/4/23	Logged By S. Metzger	Checked By M. McDonald
Drilling Method Direct Push	Drill Bit Size/Type 2"x5' macrocore	Total Depth of Borehole 20 feet bgs
Drill Rig Type 7822DT	Drilling Contractor TPI Environmental, Inc.	Approximate Surface Elevation
Groundwater Level and Date Measured 17.5' bgs	Sampling Method(s) Grab	Closest Tank PB 847
Borehole Backfill Soil Cuttings	Location	

Depth (feet)	Recovery	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
0				SM		SILTY SAND, light brown, damp, dense, poorly graded, very fine grained; petroleum like odor	3.6 4.5 15.4 68.5 89.8 124.2 133.0 186.1 144.1 108.8 108.0 133.9 221.4	Sample PB-847-15R-6.0-6.5 from 6.0-6.5' bgs
52/60							129.8 117.0	
5			PB-847-15R-6.0-6.5	CH		Clay, light gray, damp, low dilatancy, high plasticity; fill, petroleum like odor	40.6 12.7 10.4 53.8	
52/60							139.1 138.7 144.0	
10				SW		GRAVELLY SAND, reddish brown, damp, loose, well graded	55.8 53.3 17.5 95.5 120.9 32.1 15.2 32.2	
24/60							28.2 40.3	
15								
24/60								

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Project: **PESRM AST Closure**
 Project Location: **3144 Passyunk Ave**
 Project Number: **P044.001.002**

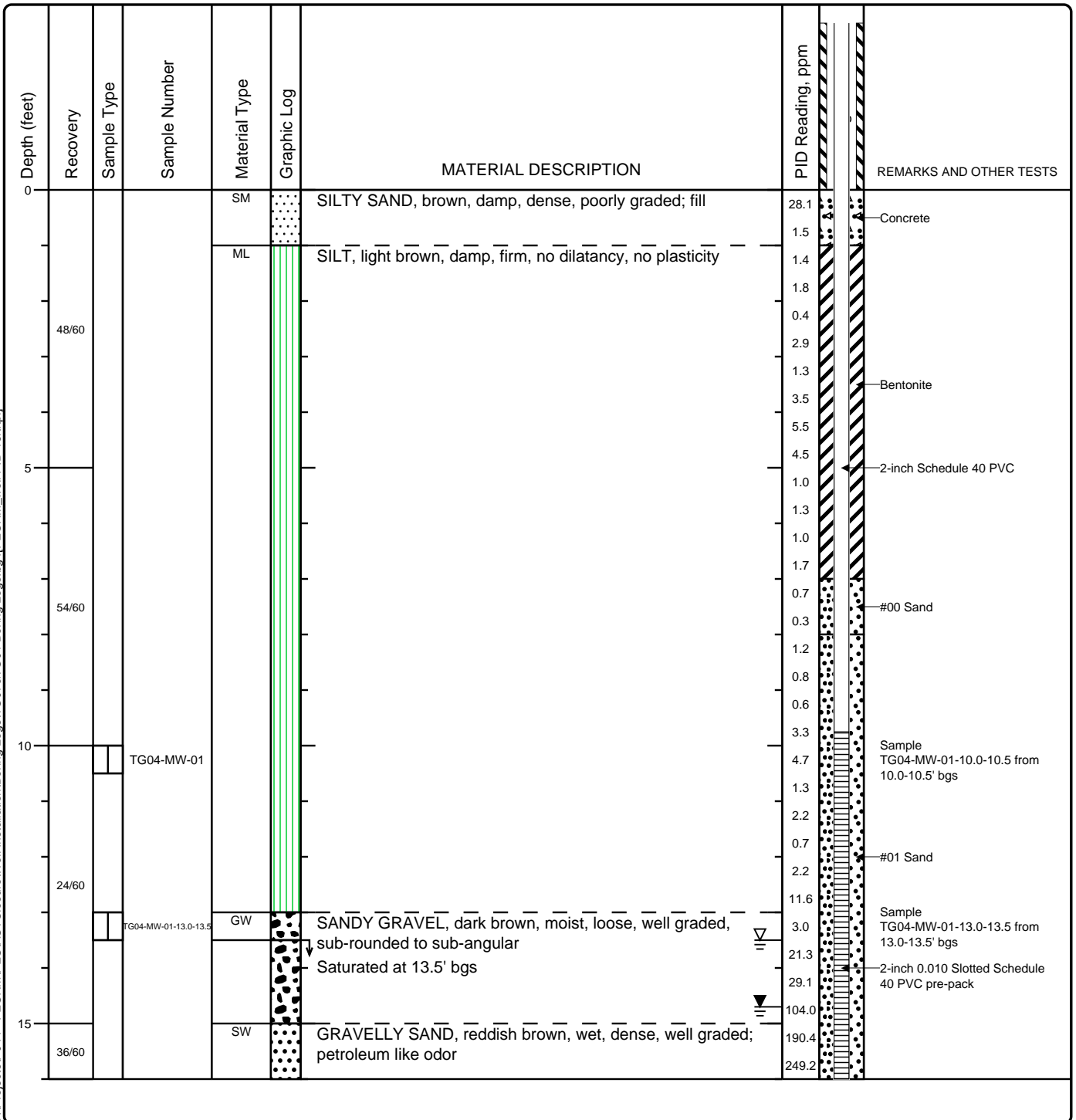
Log of Boring PB-847-15R
Sheet 2 of 2

Depth (feet)	Recovery	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	REMARKS AND OTHER TESTS
24/60			PB-847-15R-17.0-17.5	SW		GRAVELLY SAND, reddish brown, damp, loose, well graded Saturated at 17.5' bgs	59.0 374.2 289.9 311.5 279.8 309.6 335.6 326.4	Sample PB-847-15R-17.0-17.5 from 17.0-17.5
20						End boring at 20.0' bgs		

Project: **PESRM AST Closure**
 Project Location: **3144 Passyunk Ave**
 Project Number: **P044.001.002**

Log of Boring TG04-MW-01
Sheet 1 of 2

Date(s) Drilled 12/20/22	Logged By S. Metzger	Checked By M. McDonald
Drilling Method Direct Push	Drill Bit Size/Type 2"x5' macrocore	Total Depth of Borehole 20 feet bgs
Drill Rig Type 7822DT	Drilling Contractor TPI Environmental, Inc.	Approximate Surface Elevation
Groundwater Level and Date Measured 14.70' bgs	Sampling Method(s) Grab	Closest Tank PB 840
Borehole Backfill N/A	Location	



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Project: **PESRM AST Closure**
 Project Location: **3144 Passyunk Ave**
 Project Number: **P044.001.002**

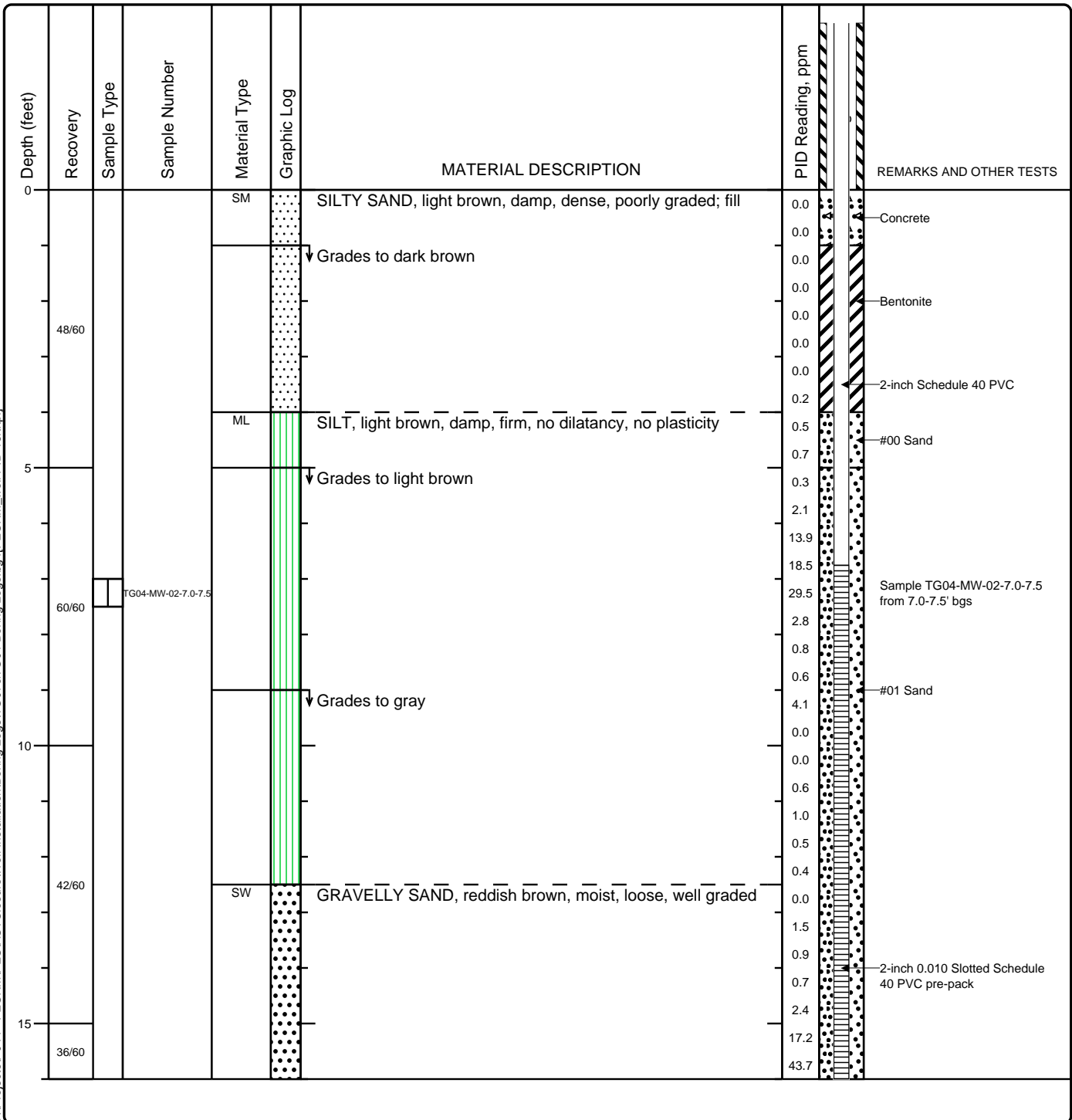
Log of Boring TG04-MW-01
Sheet 2 of 2

Depth (feet)	Recovery	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	Well Log	REMARKS AND OTHER TESTS
36/60				SW		GRAVELLY SAND, reddish brown, wet, dense, well graded; petroleum like odor	869.8 679.5 974.3 694.8 588.6		
20				SP		SAND, brown to dark gray, wet, loose, poorly graded, coarse grained; petroleum like odor	989.9 1092 959.2		
						End boring at 20.0' bgs			

Project: **PESRM AST Closure**
 Project Location: **3144 Passyunk Ave**
 Project Number: **P044.001.002**







Log of Boring TG04-MW-02
Sheet 1 of 2

Date(s) Drilled 12/19/22	Logged By S. Metzger	Checked By M. McDonald
Drilling Method Direct Push	Drill Bit Size/Type 2"x5' macrocore	Total Depth of Borehole 30 feet bgs
Drill Rig Type 7822DT	Drilling Contractor TPI Environmental, Inc.	Approximate Surface Elevation
Groundwater Level and Date Measured 24.0' bgs	Sampling Method(s) Grab	Closest Tank PB 848
Borehole Backfill N/A	Location	



Project: **PESRM AST Closure**
 Project Location: **3144 Passyunk Ave**
 Project Number: **P044.001.002**

Log of Boring TG04-MW-02
Sheet 2 of 2

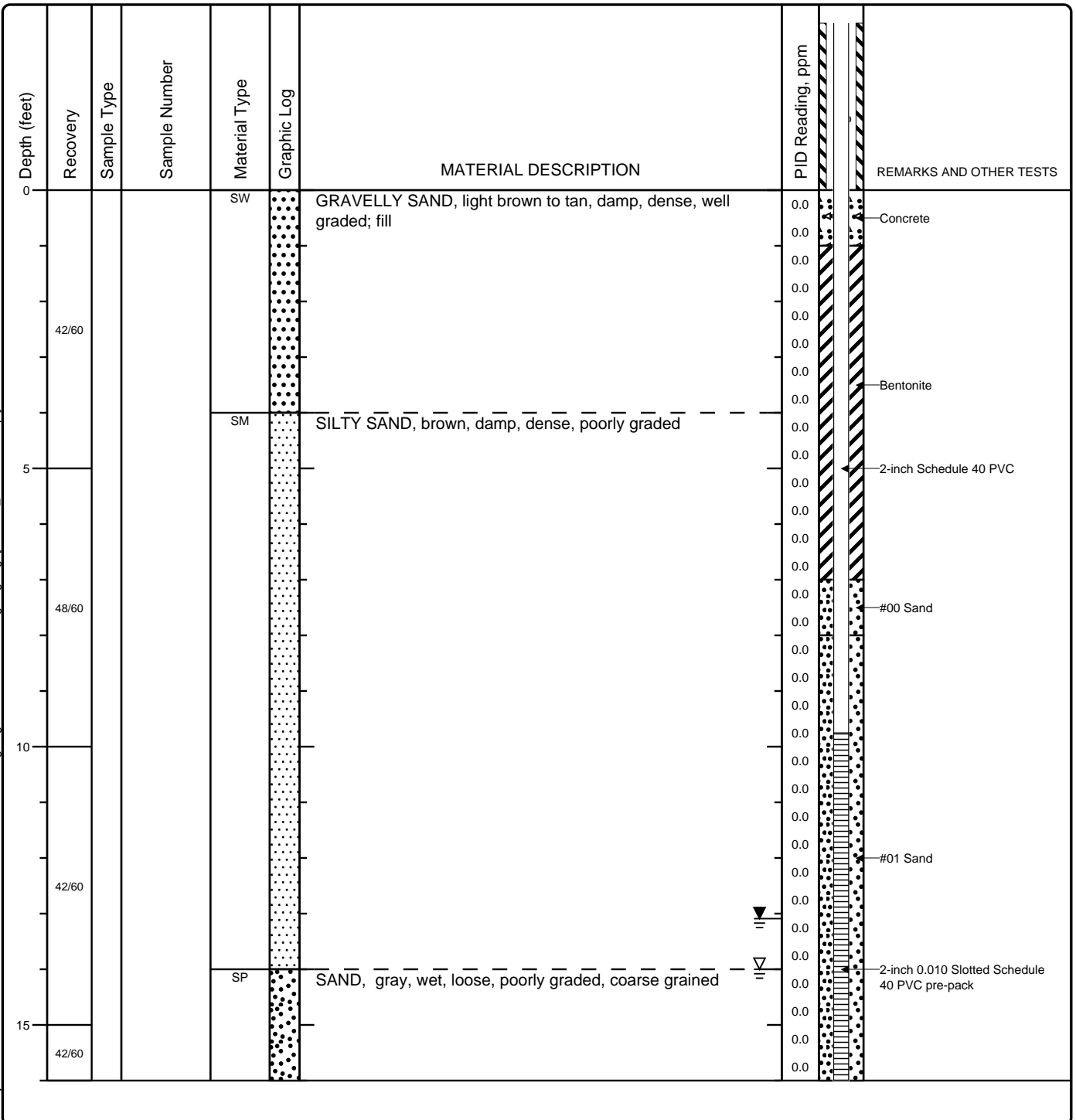
Depth (feet)	Recovery	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	Well Log	REMARKS AND OTHER TESTS
				SW		GRAVELLY SAND, reddish brown, moist, loose, well graded	4.4		
				CH		CLAY, light brown to gray, damp, low dilatancy, high plasticity	27.4		
36/60							0.2		
							0.4		
							0.3		
20							0.3		
							2.2		
							0.1		
							1.9		
							3.7		
							3.5		
						grades to reddish brown	7.8		
							0.8		
60/60							0.0		
							0.0		
			TG04-MW-02-23.5-24.0				39.2		Sample TG04-MW-02-23.5-24.0 from 23.5-24.0' bgs
				SW		GRAVELLY SAND, gray, wet, dense, well graded; Saturated at 24.0' bgs	51.3		
25							124.2		
							2.3		
							3.7		
							3.2		
							3.0		
							2.5		
24/60							4.0		
							3.6		
							2.6		
							2.8		
30						End boring at 30.0' bgs	312.8		

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Project: **PESRM AST Closure**
 Project Location: **3144 Passyunk Ave**
 Project Number: **P044.001.002**

Log of Boring TG04-MW-03
Sheet 1 of 2

Date(s) Drilled 12/19/22	Logged By S. Metzger	Checked By M. McDonald
Drilling Method Direct Push	Drill Bit Size/Type 2"x5' macrocore	Total Depth of Borehole 20 feet bgs
Drill Rig Type 7822DT	Drilling Contractor TPI Environmental, Inc.	Approximate Surface Elevation
Groundwater Level and Date Measured 13.09' bgs	Sampling Method(s)	Closest Tank PB 884
Borehole Backfill N/A	Location	



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Project: **PESRM AST Closure**
 Project Location: **3144 Passyunk Ave**
 Project Number: **P044.001.002**

Key to Log of Boring Sheet 1 of 1

Depth (feet)	Recovery	Sample Type	Sample Number	Material Type	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	Well Log	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

- | | |
|---|---|
| <p>1 Depth (feet): Depth in feet below the ground surface.</p> <p>2 Recovery : Percent Recovery</p> <p>3 Sample Type: Type of soil sample collected at the depth interval shown.</p> <p>4 Sample Number: Sample identification number.</p> <p>5 Material Type: Type of material encountered.</p> | <p>6 Graphic Log: Graphic depiction of the subsurface material encountered.</p> <p>7 MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.</p> <p>8 PID Reading, ppm: The reading from a photo-ionization detector, in parts per million.</p> <p>9 Well Log: Graphical representation of well installed upon completion of drilling and sampling.</p> <p>10 REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.</p> |
|---|---|







FIELD AND LABORATORY TEST ABBREVIATIONS

- | | |
|---|--|
| <p>CHEM: Chemical tests to assess corrosivity</p> <p>COMP: Compaction test</p> <p>CONS: One-dimensional consolidation test</p> <p>LL: Liquid Limit, percent</p> | <p>PI: Plasticity Index, percent</p> <p>SA: Sieve analysis (percent passing No. 200 Sieve)</p> <p>UC: Unconfined compressive strength test, Qu, in ksf</p> <p>WA: Wash sieve (percent passing No. 200 Sieve)</p> |
|---|--|









MATERIAL GRAPHIC SYMBOLS

- | | |
|--|--|
| <p> Bentonite</p> <p> Portland Cement Concrete</p> | <p> Silty SAND (SM)</p> <p> Poorly graded SAND (SP)</p> <p> Well graded SAND (SW)</p> |
|--|--|

TYPICAL SAMPLER GRAPHIC SYMBOLS

- | | |
|--|--|
| <p> Auger sampler</p> <p> Bulk Sample</p> <p> 3-inch-OD California w/ brass rings</p> | <p> CME Sampler</p> <p> Grab Sample</p> <p> 2.5-inch-OD Modified California w/ brass liners</p> |
|--|--|

OTHER GRAPHIC SYMBOLS

- | | |
|---|---|
| <p> Pitcher Sample</p> <p> 2-inch-OD unlined split spoon (SPT)</p> <p> Shelby Tube (Thin-walled, fixed head)</p> | <p> Water level (at time of drilling, ATD)</p> <p> Water level (after waiting, AW)</p> <p> Minor change in material properties within a stratum</p> <p> Inferred/gradational contact between strata</p> <p> Queried contact between strata</p> |
|---|---|

GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

V:\Projects\P044 - PESRM\PE\AST\Closure\Well Installation\Boring Logs\TG07&TG04 Boring Logs.bgl4[PESRM_well PID 15ft.rpl]

Figure B-1

MONITORING WELL COMPLETION RECORD

DRILLING INFORMATION

DRILLING BEGAN:
 DATE 12/20/22 TIME 923
 WELL INSTALLATION BEGAN:
 DATE 12/20/22 TIME 1049
 WELL COMPLETION FINISHED:
 DATE 1/04/23 TIME 1643
 DRILLING CO. TPI Environmental
 DRILLER B. Frace
 LICENSE _____
 DRILL RIG 7822DT
 DRILLING METHOD:
 HOLLOW STEM AUGER
 SONIC
 OTHER: Direct Push
 DIAMETER OF AUGERS:
 ID 3.0" OD _____

SURFACE COMPLETION

FLUSH MOUNT
 ABOVE GROUND W/BUMPER POST
 CONCRETE ASPHALT

MONITORING WELL

MONITORING WELL NO. TG04-MW-01
 PROJECT PESRM AST Closure
 SITE 3144 W. Passyunk Ave.
 BOREHOLE NO. N/A
 WELL PERMIT NO. N/A
 TOC TO BOTTOM OF WELL 20.0'

Choker Sand

AMOUNT CALCULATED _____
 AMOUNT USED 0.5 bags (25 lbs)
 PELLETS, SIZE _____
 CHIPS, SIZE _____
 #00 Sand
 PRODUCT Superior Quartz
 MFG. BY Filpro
 METHOD INSTALLED
 POURED TREMIE
 AMOUNT OF WATER USED _____

FILTER PACK

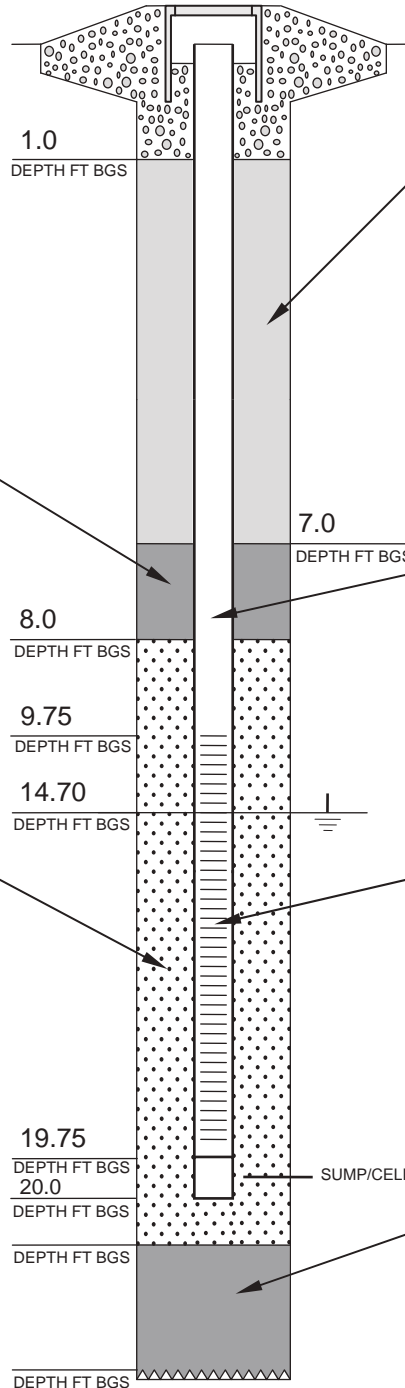
AMOUNT CALCULATED _____
 AMOUNT USED 1 bag (50 lbs)
 SAND, SIZE #1 Sand
 FORMATION COLLAPSE:
 FROM _____ TO _____
 PRODUCT Superior Quartz
 MFG. BY Filpro
 METHOD INSTALLED:
 POURED TREMIE

SURVEY INFORMATION

TOC ELEVATION _____
 GROUND ELEVATION _____
 NORTHING COORD. _____
 EASTING COORD. _____
 DATE SURVEYED _____
 SURVEY CO. _____
 TOC MEASURING POINT: _____

CENTRALIZERS USED?

YES NO
 CENTRALIZER DEPTHS: _____



ANNULAR SEAL

AMOUNT CALCULATED _____
 AMOUNT USED 4 bags (200 lbs)
 GROUT FORMULA
 PORTLAND CEMENT _____
 BENTONITE PDS Bentonite
 WATER _____
 PREPARED MIX
 PRODUCT _____
 MFG. BY _____
 METHOD INSTALLED
 POURED TREMIE

CASING

SCHEDULE 40 PVC

 PRODUCT _____
 MFG. BY _____
 CASING DIAMETER:
 ID 2" OD 2.375"
 LENGTH OF CASING 1.75'

WELL SCREEN

SCHEDULE 40 PVC
 Schedule 40 PVC pre-pack
 PRODUCT _____
 MFG. BY: Geoprobe
 CASING DIAMETER:
 ID 2.0" OD 2.75"
 SLOT SIZE 0.010
 LENGTH OF SCREEN 10.0'
 LENGTH OF SUMP .25"

BOREHOLE BACKFILL

AMOUNT CALCULATED _____
 AMOUNT USED _____
 BENTONITE CHIPS, SIZE _____
 BENTONITE PELLETS, SIZE _____
 SLURRY _____
 FORMATION COLLAPSE
 FROM _____ TO _____
 PRODUCT _____
 MFG. BY _____
 METHOD INSTALLED:
 POURED TREMIE

MONITORING WELL COMPLETION RECORD

DRILLING INFORMATION

DRILLING BEGAN:
 DATE 12/20/22 TIME 1309
 WELL INSTALLATION BEGAN:
 DATE 12/20/22 TIME 1336
 WELL COMPLETION FINISHED:
 DATE _____ TIME _____
 DRILLING CO. TPI Environmental
 DRILLER B. Frace
 LICENSE _____
 DRILL RIG 7822DT
 DRILLING METHOD:
 HOLLOW STEM AUGER
 SONIC
 OTHER: Direct Push
 DIAMETER OF AUGERS:
 ID 3.0" OD _____

SURFACE COMPLETION

FLUSH MOUNT
 ABOVE GROUND W/BUMPER POST
 CONCRETE ASPHALT

MONITORING WELL

MONITORING WELL NO. TG04-MW-02
 PROJECT PESRM AST Closure
 SITE 3144 W. Passyunk Ave.
 BOREHOLE NO. N/A
 WELL PERMIT NO. N/A
 TOC TO BOTTOM OF WELL 17.0'

Choker Sand

AMOUNT CALCULATED _____
 AMOUNT USED 0.5 bags (25 lbs)
 PELLETS, SIZE _____
 CHIPS, SIZE _____
 #00 Sand
 PRODUCT Superior Quartz
 MFG. BY Filpro
 METHOD INSTALLED
 POURED TREMIE
 AMOUNT OF WATER USED _____

FILTER PACK

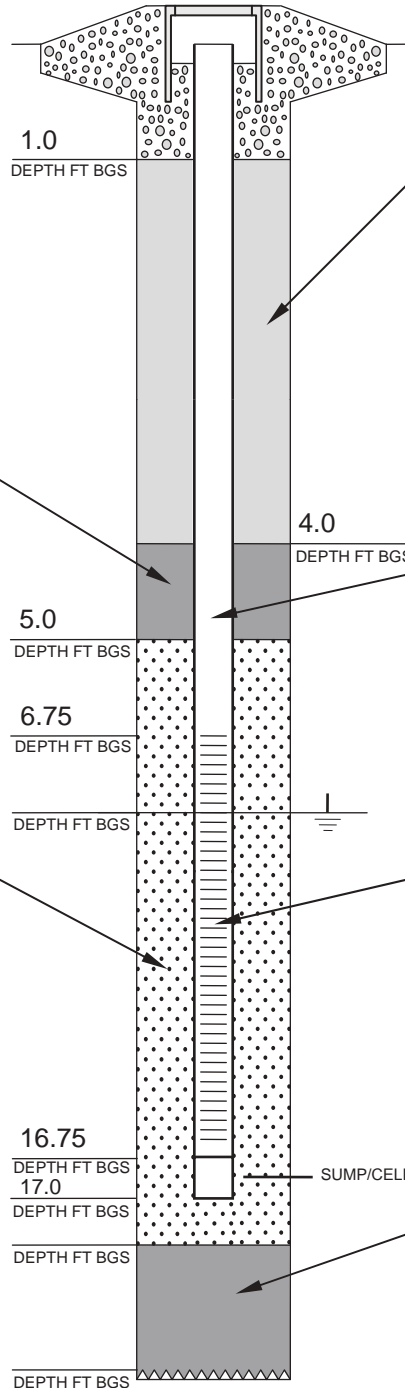
AMOUNT CALCULATED _____
 AMOUNT USED 1 bag (50 lbs)
 SAND, SIZE #1 Sand
 FORMATION COLLAPSE:
 FROM _____ TO _____
 PRODUCT Superior Quartz
 MFG. BY Filpro
 METHOD INSTALLED:
 POURED TREMIE

SURVEY INFORMATION

TOC ELEVATION _____
 GROUND ELEVATION _____
 NORTHING COORD. _____
 EASTING COORD. _____
 DATE SURVEYED _____
 SURVEY CO. _____
 TOC MEASURING POINT: _____

CENTRALIZERS USED?

YES NO
 CENTRALIZER DEPTHS: _____



ANNULAR SEAL

AMOUNT CALCULATED _____
 AMOUNT USED 2 bags (100 lbs)
 GROUT FORMULA
 PORTLAND CEMENT _____
 BENTONITE PDS Bentonite
 WATER _____
 PREPARED MIX
 PRODUCT _____
 MFG. BY _____
 METHOD INSTALLED
 POURED TREMIE

CASING

SCHEDULE 40 PVC

 PRODUCT _____
 MFG. BY _____
 CASING DIAMETER:
 ID 2" OD 2.375"
 LENGTH OF CASING 1.75'

WELL SCREEN

SCHEDULE 40 PVC
 Schedule 40 PVC pre-pack
 PRODUCT _____
 MFG. BY: Geoprobe
 CASING DIAMETER:
 ID 2.0" OD 2.75"
 SLOT SIZE 0.010
 LENGTH OF SCREEN 10.0'
 LENGTH OF SUMP .25"

BOREHOLE BACKFILL

AMOUNT CALCULATED _____
 AMOUNT USED _____
 BENTONITE CHIPS, SIZE _____
 BENTONITE PELLETS, SIZE _____
 SLURRY _____
 FORMATION COLLAPSE
 FROM _____ TO _____
 PRODUCT _____
 MFG. BY _____
 METHOD INSTALLED:
 POURED TREMIE

MONITORING WELL COMPLETION RECORD

DRILLING INFORMATION

DRILLING BEGAN:
 DATE 12/19/22 TIME 1000
 WELL INSTALLATION BEGAN:
 DATE 12/19/22 TIME 1015
 WELL COMPLETION FINISHED:
 DATE 12/19/22 TIME 1140
 DRILLING CO. TPI Environmental
 DRILLER B. Frace
 LICENSE _____
 DRILL RIG 7822DT
 DRILLING METHOD:
 HOLLOW STEM AUGER
 SONIC
 OTHER: Direct Push
 DIAMETER OF AUGERS:
 ID 3.0" OD _____

SURFACE COMPLETION

FLUSH MOUNT
 ABOVE GROUND W/BUMPER POST
 CONCRETE ASPHALT

MONITORING WELL

MONITORING WELL NO. TG04-MW-03
 PROJECT PESRM AST Closure
 SITE 3144 W. Passyunk Ave.
 BOREHOLE NO. N/A
 WELL PERMIT NO. N/A
 TOC TO BOTTOM OF WELL 20.0'

Choker Sand

AMOUNT CALCULATED _____
 AMOUNT USED 0.5 bags (25 lbs)
 PELLETS, SIZE _____
 CHIPS, SIZE _____
 #00 Sand
 PRODUCT Superior Quartz
 MFG. BY Filpro
 METHOD INSTALLED
 POURED TREMIE
 AMOUNT OF WATER USED _____

FILTER PACK

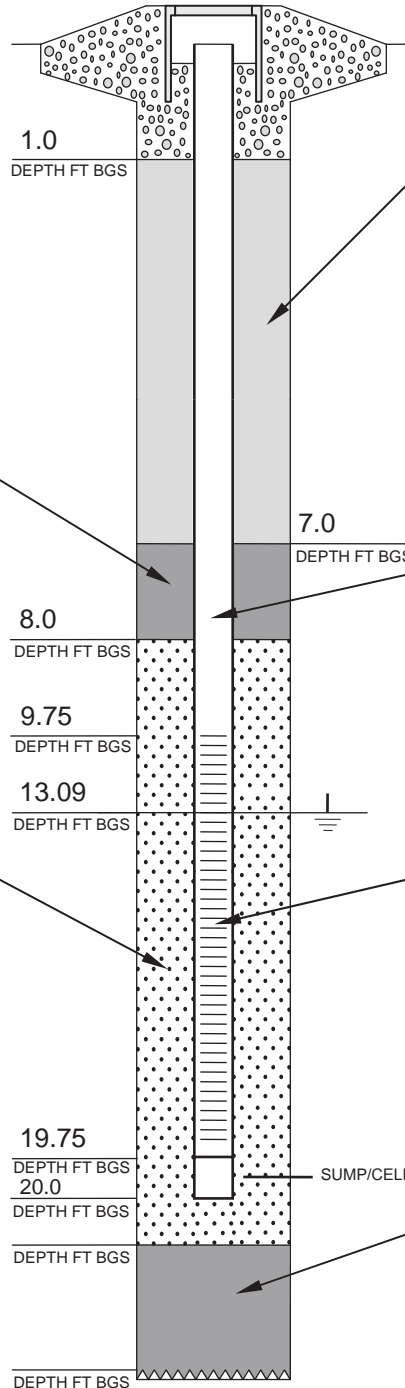
AMOUNT CALCULATED _____
 AMOUNT USED 1 bag (50 lbs)
 SAND, SIZE #1 Sand
 FORMATION COLLAPSE:
 FROM _____ TO _____
 PRODUCT Superior Quartz
 MFG. BY Filpro
 METHOD INSTALLED:
 POURED TREMIE

SURVEY INFORMATION

TOC ELEVATION _____
 GROUND ELEVATION _____
 NORTHING COORD. _____
 EASTING COORD. _____
 DATE SURVEYED _____
 SURVEY CO. _____
 TOC MEASURING POINT: _____

CENTRALIZERS USED?

YES NO
 CENTRALIZER DEPTHS: _____



ANNULAR SEAL

AMOUNT CALCULATED _____
 AMOUNT USED 4 bags (200 lbs)
 GROUT FORMULA
 PORTLAND CEMENT _____
 BENTONITE PDS Bentonite
 WATER _____
 PREPARED MIX
 PRODUCT _____
 MFG. BY _____
 METHOD INSTALLED
 POURED TREMIE

CASING

SCHEDULE 40 PVC

 PRODUCT _____
 MFG. BY _____
 CASING DIAMETER:
 ID 2" OD 2.375"
 LENGTH OF CASING 1.75'

WELL SCREEN

SCHEDULE 40 PVC
 Schedule 40 PVC pre-pack
 PRODUCT _____
 MFG. BY: Geoprobe
 CASING DIAMETER:
 ID 2.0" OD 2.75"
 SLOT SIZE 0.010
 LENGTH OF SCREEN 10.0'
 LENGTH OF SUMP .25"

BOREHOLE BACKFILL

AMOUNT CALCULATED _____
 AMOUNT USED _____
 BENTONITE CHIPS, SIZE _____
 BENTONITE PELLETS, SIZE _____
 SLURRY _____
 FORMATION COLLAPSE
 FROM _____ TO _____
 PRODUCT _____
 MFG. BY _____
 METHOD INSTALLED:
 POURED TREMIE

Appendix H

Release Notification





August 24, 2021

Mr. Ron Estel
Pennsylvania Department of Environmental Protection
Southeast Regional Office
Division of Storage Tanks
2 East Main Street
Norristown, PA 19401

sent via UPS – Delivery Confirmation

**Subject: Philadelphia Energy Solutions Refining and Marketing, LLC
PADEP Notification of Release Form – Tank Group 04
PADEP Facility ID #51-33620 – Point Breeze Refinery
Initial Notification
3144 W. Passyunk Avenue, Philadelphia, PA 19141**

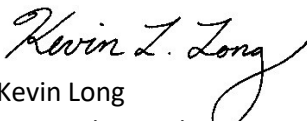
Dear Mr. Estel:

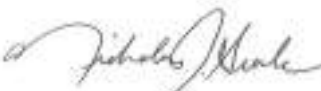
Enclosed please find a copy of the Pennsylvania Department of Environmental Protection's (PADEP) Notification of Release Form for the Philadelphia Energy Solutions Refining and Marketing, LLC (PESRM) Point Breeze Refinery. The PADEP was notified via telephone on August 20, 2021, that Aboveground Storage Tank (AST) Site Assessment sampling, performed in Tank Group 04, identified constituents in soil at concentrations greater than the applicable PADEP Medium Specific Concentrations (MSCs). Specifically, concentrations greater than applicable MSCs were identified at tank PB-882 (056A). This is the initial notification for tanks in Tank Group 04. Pursuant to discussions with our PADEP case team (Ron Estel, Rich Staron, and Lisa Strobridge), this and any subsequent notifications required in Tank Group 04 will be combined with the incident number assigned by PADEP.

Please contact me at kevin.long@terraphase.com / 609-236-8171 x93 or Nick Scala at nick.scala@terraphase.com / 609-236-8171 x92 with any questions.

Sincerely,

for Terraphase Engineering Inc.


Kevin Long
Principal Consultant


Nicholas Scala, PG, LSRP
Principal Geologist

KL/NS:cs

Enclosure: PADEP Notification of Release Form (Tank Group 04)

August 24, 2021
Mr. Ron Estel
PADEP Notification of Release Form - Tank Group 04

cc: Joseph Jeray (jjeray@hilcoglobal.com)
Stephanie Eggert (seggert@hilcoglobal.com)
Charles Barksdale (cbarksdale@hilcoglobal.com)
Bob Armstrong (rarmstrong@NorthStar.com)
Lisa Strobridge (PADEP – lstrobridge@pa.gov)
Ralph DiPietro (Philadelphia L & I – ralph.dipietro@phila.gov)

NOTIFICATION OF RELEASE (*Owners and Operators*)

FACILITY I.D. NUMBER 51 - 33620

Initial
 Follow-Up

NOTIFICATION OF CONTAMINATION (*Certified Installers and Inspectors*)

INFORMATION FOR OWNERS AND OPERATORS (O/O)

The Storage Tank Program's Corrective Action Process (CAP) regulations establish requirements for owners and operators of storage tank systems and storage tank facilities to report confirmed releases and, in certain cases, suspected releases.

Suspected Release Reporting: Upon the completion of a suspected release investigation from which it could not be determined whether a release has occurred, the owner or operator must, within 15 days of the indication of the suspected release, complete and submit this form to the appropriate regional office of the Department (Subsection 245.304(c)(2)).

Confirmed Release Reporting: The owner or operator must notify the appropriate regional office of the Department by telephone as soon as practicable, but no later than 24 hours, after the confirmation of a release (Subsections 245.305(a) and (b)). Within 15 days of that telephone notification, the owner or operator must complete and submit this form to the appropriate regional office of the Department, to each municipality in which the release occurred, and to each municipality where that release has impacted environmental media or water supplies, buildings, or sewer or other utility lines (Subsections 245.305(c) and (e)). And if new impacts to environmental media or water supplies, buildings, or sewer or other utility lines are discovered after that initial written notification, the owner or operator must, within 15 days of the discovery of the new impact, complete and submit this form to the Department and to each impacted municipality (Subsections 245.305(d) and (e)).

INFORMATION FOR CERTIFIED INSTALLERS AND INSPECTORS (I/I)

In accordance with the Storage Tank Program's certification regulations, certified installers and inspectors must complete and submit this form to the Department within 48 hours of observing any of the following while performing services as a certified installer or inspector: a release of a regulated substance; suspected or confirmed contamination of soil, surface or groundwater from regulated substances; or a regulated substance in a containment structure or facility (Subsections 245.132(a)(4) and 245.132(a)(6)).

INSTRUCTIONS

Record the storage tank facility I.D. number at the top right-hand corner of each page of this form.

Owners and Operators (O/O): Indicate if this is an initial or follow-up notification by marking the appropriate box found in the top right-hand corner of this page.

- To report a Suspected Release, complete all information in Sections I, II, IIIA, IIIC, VI, VIII and IX.
- To report a Confirmed Release, complete all information in Sections I, II, IIIA, IIIB, IIIC, IV, V, VIII and IX.

Certified Installers and Inspectors (I/I): Complete all information in Sections I, II, IIIA, IIIC, VI or VII, VIII, and IX. Attach a copy of the failed, valid tightness test results, if applicable.

PLEASE SEND COMPLETED ORIGINAL FORM TO:

PA Department of Environmental Protection
Environmental Cleanup and Brownfields Program
Storage Tank Section

(and the appropriate address below, depending on where the FACILITY is located)

<p>Northwest Region 230 Chestnut Street Meadville, PA 16335-3481 PHONE: 814-332-6945 / 800-373-3398 FAX: 814-332-6121 Counties: Armstrong, Butler, Clarion, Crawford, Elk, Erie, Forest, Indiana, Jefferson, Lawrence, McKean, Mercer, Venango, Warren</p>	<p>North-central Region 208 W. Third Street, Suite 101 Williamsport, PA 17701 PHONE: 570-327-3636 FAX: 570-327-3420 Counties: Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, Union</p>	<p>Northeast Region 2 Public Square Wilkes-Barre, PA 18701-1915 PHONE: 570-826-2511 FAX: 570-820-4907 Counties: Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, Wyoming</p>
<p>Southwest Region 400 Waterfront Drive Pittsburgh, PA 15222 PHONE: 412-442-4000 FAX: 412-442-4194 Counties: Allegheny, Beaver, Cambria, Fayette, Greene, Somerset, Washington, Westmoreland</p>	<p>South-central Region 909 Elmerton Avenue Harrisburg, PA 17110 PHONE: 717-705-4705 / 800-541-2050 FAX: 717-705-4830 Counties: Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, York</p>	<p>Southeast Region 2 East Main Street Norristown, PA 19401 PHONE: 484-250-5900 FAX: 484-250-5961 Counties: Bucks, Chester, Delaware, Montgomery, Philadelphia</p>

I. FACILITY INFORMATION (Both O/O and I/I)	II. OWNER/OPERATOR INFORMATION (Both O/O and I/I)
Facility Name <u>Philadelphia Refinery Point Breeze</u> Facility I.D. Number <u>51-33620</u> Street Address (P.O. Box not acceptable) <u>3144 W. Passyunk Avenue</u> City <u>Philadelphia</u> State <u>PA</u> Zip Code <u>19141 - 5299</u> County <u>Philadelphia</u> Municipality <u>Philadelphia</u> Contact Person <u>Anne Garr</u> Telephone Number <u>(312) 796 - 6564</u>	Owner Name <u>Philadelphia Energy Solutions Refining and Marketing LLC</u> Address <u>111 S. Wacker Dr, Suite 3000</u> City <u>Chicago</u> State <u>IL</u> Zip Code <u>60606 -</u> Telephone Number <u>(312) 796 - 6564</u> Operator Name <u>Anne Garr</u> Telephone Number <u>(312) 796 - 6564</u>

III. REGULATED SUBSTANCE INFORMATION		
A. Type of Product(s) Involved (Mark All That Apply <input checked="" type="checkbox"/>): <u>Both O/O and I/I</u>	B. Quantity (Gallons) of Product(s) Released: <u>O/O Only</u>	C. Contamination Suspected [S] or Confirmed [C] (Mark All That Apply <input checked="" type="checkbox"/>): <u>Both O/O and I/I</u>
Leaded Gasoline <input type="checkbox"/> [S] [C]
Unleaded Gasoline <input type="checkbox"/> [S] [C]
Aviation Gasoline <input type="checkbox"/> [S] [C]
Kerosene <input type="checkbox"/> [S] [C]
Jet Fuel <input type="checkbox"/> [S] [C]
Diesel Fuel <input type="checkbox"/> [S] [C]
New Motor Oil <input type="checkbox"/> [S] [C]
Used Motor Oil <input type="checkbox"/> [S] [C]
Fuel Oil No. 1 <input type="checkbox"/> [S] [C]
Fuel Oil No. 2 <input type="checkbox"/> [S] [C]
Fuel Oil No. 4 <input type="checkbox"/> [S] [C]
Fuel Oil No. 5 <input type="checkbox"/> [S] [C]
Fuel Oil No. 6 <input type="checkbox"/> [S] [C]
Other (Specify) <u>Crude</u> <input checked="" type="checkbox"/> <u>U N K N O W N</u> [S] <input checked="" type="checkbox"/> [C]
Unknown <input type="checkbox"/> [S] [C]

IV. CONFIRMED RELEASE INFORMATION (O/O Only)		
Date Release was Confirmed: <u>08 / 20 / 2021</u> <small>m d y</small>		Date Owner/Operator Sent Copy of this Written Notification to Local Municipality(ies) and Name of Municipality(ies) Notified: Date: <u> </u> / <u> </u> / <u> </u> Municipality <u>Philadelphia</u>
Date Owner/Operator Verbally Notified Appropriate Regional Office of Confirmed Release and Office Notified: Date: <u>08 / 20 / 2021</u> Office <u>Southeast Region</u>		Date: <u> </u> / <u> </u> / <u> </u> Municipality <u> </u>
Source (Mark All That Apply <input checked="" type="checkbox"/>):	How Discovered (Mark All That Apply <input checked="" type="checkbox"/>):	Environmental Media Affected and Impacts (Mark All That Apply <input checked="" type="checkbox"/>):
Tank (DEP Assigned Nos. <u>056A</u>) <input checked="" type="checkbox"/>	During Closure..... <input checked="" type="checkbox"/>	Soil <input checked="" type="checkbox"/>
Piping System (Aboveground Regulated) <input checked="" type="checkbox"/>	Lining Installation..... <input type="checkbox"/>	Sediment <input type="checkbox"/>
Piping System (Underground Regulated)..... <input type="checkbox"/>	Routine Leak Detection <input type="checkbox"/>	Surface Water <input type="checkbox"/>
Piping System (Non-Regulated)..... <input type="checkbox"/>	Third Party Inspection..... <input type="checkbox"/>	Ground Water <input type="checkbox"/>
Dispenser/Dispensing Equipment <input type="checkbox"/>	Tightness Testing Activities <input type="checkbox"/>	Bedrock <input type="checkbox"/>
Spill Prevention Equipment..... <input type="checkbox"/>	Visible Product or Odor Reports <input type="checkbox"/>	Water Supplies <input type="checkbox"/>
Submersible Turbine Pump Head/Fittings..... <input type="checkbox"/>	Water in Tank..... <input type="checkbox"/>	Vapors/Product in Buildings <input type="checkbox"/>
Containment/Sump Failure <input type="checkbox"/>	Construction <input type="checkbox"/>	Vapors/Product in Sewer/Utility Lines <input type="checkbox"/>
Other (Specify) <u> </u> <input type="checkbox"/>	Upgrade/Repair <input type="checkbox"/>	Ecological Receptors..... <input type="checkbox"/>
Unknown <input type="checkbox"/>	Supply Well Sample Results..... <input type="checkbox"/>	
Cause (Mark All That Apply <input checked="" type="checkbox"/>):	Monitoring Well Sample Results <input type="checkbox"/>	
Faulty Installation..... <input type="checkbox"/>	Property Transfer..... <input type="checkbox"/>	
Corrosion..... <input type="checkbox"/>	Other (Specify) <u>Site Assessment Sampling</u> <input checked="" type="checkbox"/>	
Physical/Mechanical Failure..... <input type="checkbox"/>	Unknown <input type="checkbox"/>	
Spill During Delivery <input type="checkbox"/>		
Overfill at Delivery..... <input type="checkbox"/>		
Vehicle Gas Tank Overfill <input type="checkbox"/>		
Product Delivery Hose Rupture..... <input type="checkbox"/>		
Accident/Natural Disaster <input type="checkbox"/>		
Other (Specify) <u> </u> <input type="checkbox"/>		
Unknown <input type="checkbox"/>		

V. INTERIM REMEDIAL ACTIONS (O/O Only)

Indicate the Interim Remedial Actions Planned, Initiated or Completed (Mark All That Apply

	Planned	Initiated	Completed	Not Applicable
Regulated Substance Removed from Storage Tanks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fire, Explosion and Safety Hazards Mitigated	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contaminated Soil Excavated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Free Product Recovered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water Supplies Identified and Sampled.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Temporary Water Supplies Provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other (Specify) <u>Site Characterization</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VI. SUSPECTED RELEASE / CONTAMINATION INFORMATION (Both O/O and I/I)

Date the Indication of a Suspected Release / Contamination was Observed: 08 / 20 / 2021
m d y

Indication of Suspected Release / Contamination (Mark All That Apply

<input type="checkbox"/> Unusual Level of Vapors	<input type="checkbox"/> Containment Sump Test Failure
<input type="checkbox"/> Erratic Behavior of Product Dispensing Equipment	<input type="checkbox"/> Spill Prevention Equipment Test Failure
<input type="checkbox"/> Release Detection Results Indicate a Release	<input checked="" type="checkbox"/> Other (Specify) <u>Site Assessment Sampling Results</u>
<input type="checkbox"/> Discovery of Holes in the Storage Tank	

VII. CONFIRMED CONTAMINATION INFORMATION (I/I Only)

Date the Confirmed Contamination was Observed: 08 / 20 / 2021
m d y

Extent of Confirmed Contamination (Mark All That Apply

<input type="checkbox"/> Product Stained or Product Saturated Soil or Backfill	<input type="checkbox"/> Free Product or Sheen on the Ground Water Surface
<input type="checkbox"/> Poned Product	<input type="checkbox"/> Free Product or Sheen on Surface Water
<input type="checkbox"/> Free Product or Sheen on Poned Water	<input checked="" type="checkbox"/> Other (Specify) <u>Site Assessment Sampling Results</u>

VIII. ADDITIONAL INFORMATION (Both O/O and I/I)

Provide any additional, relevant, available information concerning the release or contamination. If reporting a confirmed release, include specific details about the source and cause of the release, the affected environmental media, and any impacts to water supplies, buildings, or sewer or other utility lines. Owners or Operators reporting a suspected release should describe what procedures were followed to investigate the indication(s) of the suspected release noted in Section VI. Provide both DEP-assigned and owner/operator-assigned tank number(s), where applicable. Use additional 8½" x 11" sheets of paper, if necessary.

Work is being performed at the Site in accordance with the Aboveground Storage Tank Closure Work Plan (AST Work Plan) (Terraphase 2021). The PADEP approved the AST Work Plan on April 23, 2021. Pursuant to the AST Work Plan, Site Assessment sampling is being performed in Tank Groups. This notification is provided to PADEP to report that the Site Assessment sampling performed in Tank Group 04 has identified chemical concentrations in soil at levels above applicable Statewide Health Medium Specific Concentrations (MSCs). The following chemicals were detected in soil samples at concentrations greater than the applicable MSCs: 1,2,4-trimethylbenzene. Site characterization will be performed to understand the nature and extent of these concentrations above MSCs and to further assess whether these conditions actually reflect a release to the environment from these ASTs.


This notification is the initial incident reported in Tank Group 04. Pursuant to discussions with our PADEP case team, this and any subsequent notifications required in Tank Group 04 will be combined with the incident number, once assigned.

IX. CERTIFICATION (Both O/O and I/I)

OWNER OR OPERATOR CERTIFICATION

I, Anne Garr, Assistant Secretary, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the owner or operator of the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.


Signature of Owner or Operator

08 / 23 / 2021
Date

CERTIFIED INSTALLER CERTIFICATION

I, _____, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified installer who performed tank handling activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Certified Installer

Date

Installer Certification Number

Company Certification Number

CERTIFIED INSPECTOR CERTIFICATION

I, _____, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified inspector who performed inspection activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Certified Inspector

Date

Inspector Certification Number

Company Certification Number

NOTIFICATION OF RELEASE (*Owners and Operators*)

FACILITY I.D. NUMBER 51 - 33620

Initial
 Follow-Up

NOTIFICATION OF CONTAMINATION (*Certified Installers and Inspectors*)

INFORMATION FOR OWNERS AND OPERATORS (O/O)

The Storage Tank Program's Corrective Action Process (CAP) regulations establish requirements for owners and operators of storage tank systems and storage tank facilities to report confirmed releases and, in certain cases, suspected releases.

Suspected Release Reporting: Upon the completion of a suspected release investigation from which it could not be determined whether a release has occurred, the owner or operator must, within 15 days of the indication of the suspected release, complete and submit this form to the appropriate regional office of the Department (Subsection 245.304(c)(2)).

Confirmed Release Reporting: The owner or operator must notify the appropriate regional office of the Department by telephone as soon as practicable, but no later than 24 hours, after the confirmation of a release (Subsections 245.305(a) and (b)). Within 15 days of that telephone notification, the owner or operator must complete and submit this form to the appropriate regional office of the Department, to each municipality in which the release occurred, and to each municipality where that release has impacted environmental media or water supplies, buildings, or sewer or other utility lines (Subsections 245.305(c) and (e)). And if new impacts to environmental media or water supplies, buildings, or sewer or other utility lines are discovered after that initial written notification, the owner or operator must, within 15 days of the discovery of the new impact, complete and submit this form to the Department and to each impacted municipality (Subsections 245.305(d) and (e)).

INFORMATION FOR CERTIFIED INSTALLERS AND INSPECTORS (I/I)

In accordance with the Storage Tank Program's certification regulations, certified installers and inspectors must complete and submit this form to the Department within 48 hours of observing any of the following while performing services as a certified installer or inspector: a release of a regulated substance; suspected or confirmed contamination of soil, surface or groundwater from regulated substances; or a regulated substance in a containment structure or facility (Subsections 245.132(a)(4) and 245.132(a)(6)).

INSTRUCTIONS

Record the storage tank facility I.D. number at the top right-hand corner of each page of this form.

Owners and Operators (O/O): Indicate if this is an initial or follow-up notification by marking the appropriate box found in the top right-hand corner of this page.

- To report a Suspected Release, complete all information in Sections I, II, IIIA, IIIC, VI, VIII and IX.
- To report a Confirmed Release, complete all information in Sections I, II, IIIA, IIIB, IIIC, IV, V, VIII and IX.

Certified Installers and Inspectors (I/I): Complete all information in Sections I, II, IIIA, IIIC, VI or VII, VIII, and IX. Attach a copy of the failed, valid tightness test results, if applicable.

PLEASE SEND COMPLETED ORIGINAL FORM TO:

PA Department of Environmental Protection
Environmental Cleanup and Brownfields Program
Storage Tank Section

(and the appropriate address below, depending on where the FACILITY is located)

<p>Northwest Region 230 Chestnut Street Meadville, PA 16335-3481 PHONE: 814-332-6945 / 800-373-3398 FAX: 814-332-6121 Counties: Armstrong, Butler, Clarion, Crawford, Elk, Erie, Forest, Indiana, Jefferson, Lawrence, McKean, Mercer, Venango, Warren</p>	<p>North-central Region 208 W. Third Street, Suite 101 Williamsport, PA 17701 PHONE: 570-327-3636 FAX: 570-327-3420 Counties: Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga, Union</p>	<p>Northeast Region 2 Public Square Wilkes-Barre, PA 18701-1915 PHONE: 570-826-2511 FAX: 570-820-4907 Counties: Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne, Wyoming</p>
<p>Southwest Region 400 Waterfront Drive Pittsburgh, PA 15222 PHONE: 412-442-4000 FAX: 412-442-4194 Counties: Allegheny, Beaver, Cambria, Fayette, Greene, Somerset, Washington, Westmoreland</p>	<p>South-central Region 909 Elmerton Avenue Harrisburg, PA 17110 PHONE: 717-705-4705 / 800-541-2050 FAX: 717-705-4830 Counties: Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry, York</p>	<p>Southeast Region 2 East Main Street Norristown, PA 19401 PHONE: 484-250-5900 FAX: 484-250-5961 Counties: Bucks, Chester, Delaware, Montgomery, Philadelphia</p>

I. FACILITY INFORMATION (Both O/O and I/I)			II. OWNER/OPERATOR INFORMATION (Both O/O and I/I)		
Facility Name <u>Philadelphia Refinery Point Breeze</u>	Facility I.D. Number <u>51-33620</u>		Owner Name <u>Philadelphia Energy Solutions Refining and Marketing, LLC</u>		
Street Address (P.O. Box not acceptable) <u>3144 W. Passyunk Avenue</u>			Address <u>111 S. Wacker Dr, Suite 3000</u>		
City <u>Philadelphia</u>	State <u>PA</u>	Zip Code <u>19141 - 5299</u>	City <u>Chicago</u>	State <u>IL</u>	Zip Code <u>60606 -</u>
County <u>Philadelphia</u>	Municipality <u>Philadelphia</u>		Telephone Number <u>(312) 796 - 6564</u>		
Contact Person <u>Anne Garr</u>	Telephone Number <u>(312) 796 - 6564</u>		Operator Name <u>Anne Garr</u>		
			Telephone Number <u>(312) 796 - 6564</u>		

III. REGULATED SUBSTANCE INFORMATION		
A. Type of Product(s) Involved (Mark All That Apply <input checked="" type="checkbox"/>): <u>Both O/O and I/I</u>	B. Quantity (Gallons) of Product(s) Released: <u>O/O Only</u>	C. Contamination Suspected [S] or Confirmed [C] (Mark All That Apply <input checked="" type="checkbox"/>): <u>Both O/O and I/I</u>
Leaded Gasoline <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Unleaded Gasoline <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Aviation Gasoline <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Kerosene <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Jet Fuel <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Diesel Fuel <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
New Motor Oil <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Used Motor Oil <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Fuel Oil No. 1 <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Fuel Oil No. 2 <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Fuel Oil No. 4 <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Fuel Oil No. 5 <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Fuel Oil No. 6 <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]
Other (Specify) <u>Crude, Light Cycle Oil</u> <input checked="" type="checkbox"/> <u>U N K N O W N</u> <input type="checkbox"/> [S] <input checked="" type="checkbox"/> [C]
Unknown <input type="checkbox"/> <input type="checkbox"/> [S] <input type="checkbox"/> [C]

IV. CONFIRMED RELEASE INFORMATION (O/O Only)		
Date Release was Confirmed: <u>08 / 10 / 2022</u> <small>m d y</small>	Date Owner/Operator Sent Copy of this Written Notification to Local Municipality(ies) and Name of Municipality(ies) Notified: Date: <u>08 / 19 / 2022</u> Municipality <u>Philadelphia</u> <small>m d y</small>	
Date Owner/Operator Verbally Notified Appropriate Regional Office of Confirmed Release and Office Notified: Date: <u>08 / 20 / 2022</u> Office <u>Southeast Region</u> <small>m d y</small>	Date: <u> / / </u> Municipality <u> </u> <small>m d y</small>	
Source (Mark All That Apply <input checked="" type="checkbox"/>): <u>Both O/O and I/I</u>	How Discovered (Mark All That Apply <input checked="" type="checkbox"/>): <u>Both O/O and I/I</u>	Environmental Media Affected and Impacts (Mark All That Apply <input checked="" type="checkbox"/>): <u>Both O/O and I/I</u>
Tank (DEP Assigned Nos. 053A, 058A, 088A)..... <input checked="" type="checkbox"/>	During Closure..... <input checked="" type="checkbox"/>	Soil <input checked="" type="checkbox"/>
Piping System (Aboveground Regulated) <input checked="" type="checkbox"/>	Lining Installation..... <input type="checkbox"/>	Sediment <input type="checkbox"/>
Piping System (Underground Regulated)..... <input type="checkbox"/>	Routine Leak Detection <input type="checkbox"/>	Surface Water <input type="checkbox"/>
Piping System (Non-Regulated)..... <input type="checkbox"/>	Third Party Inspection..... <input type="checkbox"/>	Ground Water <input type="checkbox"/>
Dispenser/Dispensing Equipment <input type="checkbox"/>	Tightness Testing Activities <input type="checkbox"/>	Bedrock <input type="checkbox"/>
Spill Prevention Equipment..... <input type="checkbox"/>	Visible Product or Odor Reports <input type="checkbox"/>	Water Supplies <input type="checkbox"/>
Submersible Turbine Pump Head/Fittings..... <input type="checkbox"/>	Water in Tank..... <input type="checkbox"/>	Vapors/Product in Buildings <input type="checkbox"/>
Containment/Sump Failure <input type="checkbox"/>	Construction <input type="checkbox"/>	Vapors/Product in Sewer/Utility Lines <input type="checkbox"/>
Other (Specify) <input type="checkbox"/>	Upgrade/Repair <input type="checkbox"/>	Ecological Receptors..... <input type="checkbox"/>
Unknown <input type="checkbox"/>	Supply Well Sample Results..... <input type="checkbox"/>	
Cause (Mark All That Apply <input checked="" type="checkbox"/>): <u>Both O/O and I/I</u>	Monitoring Well Sample Results <input type="checkbox"/>	
Faulty Installation..... <input type="checkbox"/>	Property Transfer..... <input type="checkbox"/>	
Corrosion..... <input type="checkbox"/>	Other (Specify) <u>Site Assessment Sampling</u> <input checked="" type="checkbox"/>	
Physical/Mechanical Failure..... <input type="checkbox"/>	Unknown <input type="checkbox"/>	
Spill During Delivery <input type="checkbox"/>		
Overfill at Delivery..... <input type="checkbox"/>		
Vehicle Gas Tank Overfill <input type="checkbox"/>		
Product Delivery Hose Rupture..... <input type="checkbox"/>		
Accident/Natural Disaster <input type="checkbox"/>		
Other (Specify) <input type="checkbox"/>		
Unknown <input type="checkbox"/>		

V. INTERIM REMEDIAL ACTIONS (O/O Only)

Indicate the Interim Remedial Actions Planned, Initiated or Completed (Mark All That Apply

	Planned	Initiated	Completed	Not Applicable
Regulated Substance Removed from Storage Tanks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fire, Explosion and Safety Hazards Mitigated	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contaminated Soil Excavated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Free Product Recovered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water Supplies Identified and Sampled.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Temporary Water Supplies Provided	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other (Specify) <u>Site Characterization</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VI. SUSPECTED RELEASE / CONTAMINATION INFORMATION (Both O/O and I/I)

Date the Indication of a Suspected Release / Contamination was Observed: 08 / 10 / 2022
 m d y

Indication of Suspected Release / Contamination (Mark All That Apply

- Unusual Level of Vapors
- Erratic Behavior of Product Dispensing Equipment
- Release Detection Results Indicate a Release
- Discovery of Holes in the Storage Tank
- Containment Sump Test Failure
- Spill Prevention Equipment Test Failure
- Other (Specify) Site Assessment Sampling Results

VII. CONFIRMED CONTAMINATION INFORMATION (I/I Only)

Date the Confirmed Contamination was Observed: 08 / 10 / 2022
 m d y

Extent of Confirmed Contamination (Mark All That Apply

- Product Stained or Product Saturated Soil or Backfill
- Poned Product
- Free Product or Sheen on Poned Water
- Free Product or Sheen on the Ground Water Surface
- Free Product or Sheen on Surface Water
- Other (Specify) Site Assessment Sampling Results

VIII. ADDITIONAL INFORMATION (Both O/O and I/I)

Provide any additional, relevant, available information concerning the release or contamination. If reporting a confirmed release, include specific details about the source and cause of the release, the affected environmental media, and any impacts to water supplies, buildings, or sewer or other utility lines. Owners or Operators reporting a suspected release should describe what procedures were followed to investigate the indication(s) of the suspected release noted in Section VI. Provide both DEP-assigned and owner/operator-assigned tank number(s), where applicable. Use additional 8½" x 11" sheets of paper, if necessary.

Work is being performed at the Site in accordance with the Aboveground Storage Tank Closure Work Plan (AST Work Plan) (Terraphase 2021). The PADEP approved the AST Work Plan on April 23, 2021. Pursuant to the AST Work Plan, Site Assessment sampling is being performed in Tank Groups. This notification is provided to PADEP to report that the Site Assessment sampling performed in Tank Group 04 has identified chemical concentrations in soil at levels above applicable Statewide Health Medium Specific Concentrations (MSCs). The following chemicals were detected in soil samples at concentrations greater than the applicable MSCs: benzene and lead. Site characterization will be performed to understand the nature and extent of these concentrations above MSCs and to further assess whether these conditions actually reflect a release to the environment from these ASTs.

This notification is the initial incident reported in Tank Group 04 (Incident #57976). Pursuant to discussions with our PADEP case team, this and any subsequent notifications required in Tank Group 04 will be combined with the incident number #57976.

IX. CERTIFICATION (Both O/O and I/I)

OWNER OR OPERATOR CERTIFICATION

I, Anne R. Garr, Assistant Secretary, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the owner or operator of the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.


Signature of Owner or Operator

08 / 17 / 2022
Date

CERTIFIED INSTALLER CERTIFICATION

I, _____, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified installer who performed tank handling activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Certified Installer

Date

Installer Certification Number

Company Certification Number

CERTIFIED INSPECTOR CERTIFICATION

I, _____, hereby certify, under penalty of law as provided in 18 Pa.
(Print Name)

C.S.A. §4904 (relating to unsworn falsification to authorities) that I am the certified inspector who performed inspection activities at the above referenced storage tank facility and that the information provided by me in this notification is true, accurate and complete to the best of my knowledge and belief.

Signature of Certified Inspector

Date

Inspector Certification Number

Company Certification Number

Appendix I

Site Assessment and Site Characterization Soil and Groundwater Results



Table I1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-191-01	PB-191-02	PB-191-03	PB-191-04	PB-191-05	PB-191-06	PB-191-07	PB-191-07	PB-191-08
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-191-01-SS01	PB-191-02-SS01	PB-191-03-SS01	PB-191-04-SS01	PB-191-05-SS01	PB-191-06-SS01	PB-191-07-SS01	DUP-25	PB-191-08-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	1.5 - 2.0	3.0 - 3.5	0.5 - 1.0	4.5 - 5.0	4.5 - 5.0	4.5 - 5.0
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					12/9/2021	12/9/2021	7/15/2022	12/9/2021	12/9/2021	12/9/2021	12/9/2021	12/9/2021	12/9/2021
Comments												Field Duplicate	
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00073)	0.0094 (0.0012)	ND (0.00066)	0.0012 (0.00065)	ND (0.00058)	ND (0.00057)	ND (0.0011)	ND (0.00071)	0.0003 J (0.00057)
Cumene	1000	6.1	87	1000	ND (0.0014)	0.0022 J (0.0024)	ND (0.0013)	0.0015 (0.0013)	0.00027 J (0.0012)	0.0036 (0.0011)	ND (0.0022)	0.0082 (0.0014)	0.003 (0.0011)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00073)	ND (0.0012)	ND (0.00066)	ND (0.00065)	ND (0.00058)	ND (0.00057)	ND (0.0011)	ND (0.00071)	ND (0.00057)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0014)	ND (0.0024)	ND (0.0013)	ND (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.0022)	ND (0.0014)	ND (0.0011)
Ethyl Benzene	2300	15	1300	820	ND (0.0014)	0.0012 J (0.0024)	ND (0.0013)	0.001 J (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.0022)	ND (0.0014)	0.00021 J (0.0011)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0029)	ND (0.0049)	ND (0.0026)	ND (0.0026)	ND (0.0023)	ND (0.0023)	ND (0.0043)	ND (0.0028)	ND (0.0023)
Toluene	8000	76	650	9800	ND (0.0014)	0.0015 J (0.0024)	ND (0.0013)	ND (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.0022)	ND (0.0014)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0029)	0.0013 J (0.0049)	ND (0.0026)	0.0023 J (0.0026)	ND (0.0023)	0.00046 J (0.0023)	ND (0.0043)	ND (0.0028)	0.0031 (0.0023)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0029)	0.00054 J (0.0049)	ND (0.0026)	0.0013 J (0.0026)	ND (0.0023)	ND (0.0023)	ND (0.0043)	ND (0.0028)	0.00066 J (0.0023)
Xylenes (total)	240	1.5	51	340	ND (0.0014)	0.0047 J (0.0024)	ND (0.0013)	0.0032 J (0.0013)	ND (0.0012)	ND (0.0011)	ND (0.0022)	ND (0.0014)	0.0023 (0.0011)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.12)	0.049 J (0.13)	ND (0.1)	ND (0.6)	0.16 (0.12)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	0.17 (0.12)	0.077 J (0.12)	0.11 J (0.12)	0.095 J (0.13)	ND (0.1)	ND (0.6)	0.21 (0.12)	ND (0.12)	0.047 J (0.12)
Benzo(a)pyrene	43	--	7.7	--	0.15 J (0.16)	0.071 J (0.16)	0.12 J (0.17)	0.076 J (0.18)	ND (0.14)	ND (0.8)	0.18 (0.16)	ND (0.16)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	0.19 (0.12)	0.089 J (0.12)	0.13 (0.12)	0.099 J (0.13)	ND (0.1)	ND (0.6)	0.17 (0.12)	ND (0.12)	0.054 J (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	0.088 J (0.16)	0.062 J (0.16)	0.06 J (0.17)	0.056 J (0.18)	ND (0.14)	ND (0.8)	0.19 (0.16)	ND (0.16)	0.043 J (0.16)
Chrysene	43000	--	320000	--	0.16 (0.12)	0.08 J (0.12)	0.1 J (0.12)	0.095 J (0.13)	ND (0.1)	ND (0.6)	0.26 (0.12)	ND (0.12)	0.052 J (0.12)
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.21)	ND (0.21)	0.054 J (0.22)	ND (0.18)	ND (1)	0.061 J (0.2)	0.044 J (0.2)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	0.1 J (0.16)	0.055 J (0.16)	0.07 J (0.17)	0.056 J (0.18)	ND (0.14)	ND (0.8)	0.11 J (0.16)	ND (0.16)	0.031 J (0.16)
Naphthalene	41	0.54	6	27	0.039 J (0.2)	0.063 J (0.21)	ND (0.21)	0.1 J (0.22)	ND (0.18)	ND (1)	0.23 (0.2)	ND (0.2)	0.059 J (0.19)
Phenanthrene	4600	--	14000	--	0.11 J (0.12)	0.092 J (0.12)	ND (0.12)	0.19 (0.13)	ND (0.1)	ND (0.6)	0.77 (0.12)	ND (0.12)	0.084 J (0.12)
Pyrene	4600	--	14000	--	0.22 (0.12)	0.1 J (0.12)	0.16 (0.12)	0.14 (0.13)	ND (0.1)	ND (0.6)	0.44 (0.12)	0.021 J (0.12)	0.07 J (0.12)
Metals													
Lead	2520	--	2520	45000	110 (2.34)	46.8 (2.36)	19.8 (2.41)	295 (2.62)	12.8 (10.5)	26.5 (2.38)	176 (4.59)	218 (4.72)	84.5 (2.3)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-826-01	PB-826-02	PB-826-03	PB-826-04	PB-826-05	PB-826-06	PB-826-07	PB-826-08	PB-826-09
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-826-01-SS01	PB-826-02-SS01	PB-826-03-SS01	PB-826-04-SS01	PB-826-05-SS01	PB-826-06-SS01	PB-826-07-SS01	PB-826-08-SS01	PB-826-09-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	4.5 - 5.0
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00069)	ND (0.00052)	ND (0.00063)	ND (0.00097)	ND (0.00055)	ND (0.00075)	ND (0.00061)	0.00033 J (0.00051)	ND (0.00068)
Cumene	1000	6.1	87	1000	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.001)	ND (0.0014)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00069)	ND (0.00052)	ND (0.00063)	ND (0.00097)	ND (0.00055)	ND (0.00075)	ND (0.00061)	ND (0.00051)	ND (0.00068)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.001)	ND (0.0014)
Ethyl Benzene	2300	15	1300	820	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.001)	ND (0.0014)
Methyl tert-butyl ether	2400	16	390	5900	0.00032 J (0.0028)	0.001 J (0.0021)	0.02 (0.0025)	0.0012 J (0.0039)	ND (0.0022)	0.013 (0.003)	0.016 (0.0024)	ND (0.002)	ND (0.0027)
Toluene	8000	76	650	9800	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.001)	ND (0.0014)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0028)	ND (0.0021)	ND (0.0025)	ND (0.0039)	ND (0.0022)	ND (0.003)	ND (0.0024)	ND (0.002)	ND (0.0027)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0028)	ND (0.0021)	ND (0.0025)	ND (0.0039)	ND (0.0022)	ND (0.003)	ND (0.0024)	ND (0.002)	ND (0.0027)
Xylenes (total)	240	1.5	51	340	ND (0.0014)	ND (0.001)	ND (0.0013)	ND (0.0019)	ND (0.0011)	ND (0.0015)	ND (0.0012)	ND (0.001)	ND (0.0014)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.16)
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.17)	ND (0.2)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.2)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.17)	ND (0.2)	ND (0.2)
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	3.14 J (4.68)	3.36 J (4.04)	3.14 J (4.08)	3.88 J (4.14)	3.46 J (4.14)	8.1 J (10.4)	3.19 J (10.3)	4.67 J (4.69)	5.55 (4.83)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-826-10	PB-826-11	PB-826-12	PB-826-13	PB-826-14	PB-826-15	PB-826-15	PB-826-16	PB-840-01
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-826-10-SS01	PB-826-11-SS01	PB-826-12-SS01	PB-826-13-SS01	PB-826-14-SS01	PB-826-15-SS01	DUP-44	PB-826-16-SS01	PB-840-01-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/13/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/8/2022
Comments	Field Duplicate												
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00073)	ND (0.00059)	ND (0.00055)	ND (0.0007)	ND (0.031)	ND (0.00086)	0.068 (0.036)	ND (0.00089)	0.006 (0.0008)
Cumene	1000	6.1	87	1000	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	0.28 (0.062)	ND (0.0017)	1 (0.071)	ND (0.0018)	0.0092 (0.0016)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00073)	ND (0.00059)	ND (0.00055)	ND (0.0007)	ND (0.031)	ND (0.00086)	ND (0.036)	ND (0.00089)	ND (0.0008)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	ND (0.062)	ND (0.0017)	ND (0.071)	ND (0.0018)	ND (0.0016)
Ethyl Benzene	2300	15	1300	820	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	0.73 (0.062)	ND (0.0017)	0.56 (0.071)	ND (0.0018)	0.00068 J (0.0016)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0029)	ND (0.0024)	ND (0.0022)	ND (0.0028)	ND (0.12)	ND (0.0034)	ND (0.14)	ND (0.0036)	ND (0.0032)
Toluene	8000	76	650	9800	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	ND (0.062)	ND (0.0017)	0.051 J (0.071)	ND (0.0018)	0.0026 (0.0016)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0029)	ND (0.0024)	ND (0.0022)	ND (0.0028)	<u>12 (0.12)</u>	ND (0.0034)	<u>15 (0.14)</u>	0.00061 J (0.0036)	0.0014 J (0.0032)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0029)	ND (0.0024)	ND (0.0022)	ND (0.0028)	<u>4.4 (0.12)</u>	ND (0.0034)	<u>4.8 (0.14)</u>	0.00089 J (0.0036)	0.0023 J (0.0032)
Xylenes (total)	240	1.5	51	340	ND (0.0015)	ND (0.0012)	ND (0.0011)	ND (0.0014)	0.21 J (0.062)	ND (0.0017)	<u>29 (0.071)</u>	ND (0.0018)	0.008 J (0.0016)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.061 J (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.03 J (0.12)	0.069 J (0.12)	0.027 J (0.1)	ND (0.11)	0.15 (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	0.053 J (0.15)	ND (0.14)	ND (0.15)	0.15 J (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.12)	0.055 J (0.12)	0.029 J (0.1)	ND (0.11)	0.18 (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	0.041 J (0.15)	0.027 J (0.14)	ND (0.15)	0.12 J (0.16)
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.042 J (0.12)	0.095 J (0.12)	0.15 (0.1)	ND (0.11)	0.22 (0.12)
Fluorene	6200	--	18000	--	ND (0.18)	ND (0.18)	ND (0.17)	ND (0.18)	0.18 J (0.19)	ND (0.19)	0.39 (0.17)	ND (0.19)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.18)	ND (0.18)	ND (0.17)	ND (0.18)	0.32 (0.19)	0.052 J (0.19)	<u>2.7 (0.17)</u>	0.025 J (0.19)	0.046 J (0.2)
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.64 (0.12)	0.15 (0.12)	0.99 (0.1)	ND (0.11)	0.19 (0.12)
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	0.16 (0.12)	0.18 (0.12)	0.085 J (0.1)	ND (0.11)	0.21 (0.12)
Metals													
Lead	2520	--	2520	45000	3.72 J (4.13)	3.61 J (4.12)	3 J (4.04)	4.29 (4.12)	8.32 (2.23)	162 (2.2)	1.7 J (2.11)	6.77 (2.22)	19.2 (4.58)

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
3 Underlined concentrations exceed the Routine Worker Soil VI.
4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-840-01	PB-840-02	PB-840-03	PB-840-04	PB-840-05	PB-840-06	PB-840-07	PB-840-08	PB-840-09
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	DUP-38	PB-840-02-SS01	PB-840-03-SS01	PB-840-04-SS01	PB-840-05-SS01	PB-840-06-SS01	PB-840-07-SS01	PB-840-08-SS01	PB-840-09-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022
Comments					Field Duplicate								
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00057)	0.00021 J (0.00051)	ND (0.00048)	ND (0.00052)	ND (0.00072)	ND (0.00046)	0.023 (0.00056)	0.00069 (0.00055)	<u>4.4 (0.15)</u>
Cumene	1000	6.1	87	1000	ND (0.0011)	0.00034 J (0.001)	0.00015 J (0.00095)	ND (0.001)	ND (0.0014)	0.0016 (0.00093)	0.002 (0.0011)	0.00015 J (0.0011)	<u>15 (0.3)</u>
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00057)	ND (0.00051)	ND (0.00048)	ND (0.00052)	ND (0.00072)	ND (0.00046)	ND (0.00056)	ND (0.00055)	ND (0.15)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.001)	ND (0.00095)	ND (0.001)	ND (0.0014)	ND (0.00093)	ND (0.0011)	ND (0.0011)	ND (0.3)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	0.00019 J (0.001)	0.00028 J (0.00095)	ND (0.001)	ND (0.0014)	0.00058 J (0.00093)	0.016 (0.0011)	ND (0.0011)	<u>66 (0.3)</u>
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0023)	ND (0.002)	ND (0.0019)	ND (0.0021)	ND (0.0029)	ND (0.0018)	ND (0.0022)	ND (0.0022)	ND (0.61)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.001)	ND (0.00095)	ND (0.001)	ND (0.0014)	ND (0.00093)	0.00079 J (0.0011)	ND (0.0011)	0.3 (0.3)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0023)	0.0035 (0.002)	ND (0.0019)	ND (0.0021)	ND (0.0029)	ND (0.0018)	0.019 (0.0022)	ND (0.0022)	<u>92 (1.2)</u>
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0023)	0.0059 (0.002)	0.00062 J (0.0019)	ND (0.0021)	0.00047 J (0.0029)	ND (0.0018)	0.0056 (0.0022)	ND (0.0022)	<u>33 (0.61)</u>
Xylenes (total)	240	1.5	51	340	ND (0.0011)	0.002 (0.001)	ND (0.00095)	ND (0.001)	ND (0.0014)	ND (0.00093)	0.044 (0.0011)	ND (0.0011)	<u>200 (0.3)</u>
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	0.092 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	0.16 (0.12)
Benzo(a)anthracene	430	--	3200	--	0.44 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.03 J (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	0.97 (0.12)
Benzo(a)pyrene	43	--	7.7	--	0.4 (0.15)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.15)	ND (0.16)	ND (0.16)	0.096 J (0.15)
Benzo(b)fluoranthene	430	--	3200	--	0.52 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.053 J (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	0.12 (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	0.18 (0.15)	ND (0.15)	ND (0.15)	ND (0.14)	0.025 J (0.14)	ND (0.15)	ND (0.16)	ND (0.16)	0.072 J (0.15)
Chrysene	43000	--	320000	--	0.43 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.056 J (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	0.22 (0.12)
Fluorene	6200	--	18000	--	0.052 J (0.19)	ND (0.18)	ND (0.19)	ND (0.17)	0.023 J (0.18)	ND (0.18)	ND (0.19)	ND (0.2)	1.9 (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.045 J (0.19)	ND (0.18)	ND (0.19)	ND (0.17)	0.075 J (0.18)	ND (0.18)	ND (0.19)	ND (0.2)	<u>9.3 (1.9)</u>
Phenanthrene	4600	--	14000	--	0.39 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.073 J (0.11)	0.049 J (0.11)	ND (0.12)	ND (0.12)	4.8 (0.12)
Pyrene	4600	--	14000	--	0.53 (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	0.056 J (0.11)	0.018 J (0.11)	ND (0.12)	ND (0.12)	0.48 (0.12)
Metals													
Lead	2520	--	2520	45000	36.7 (2.2)	4.66 (2.26)	5.92 (2.29)	10.9 (2.02)	103 (2.12)	6.05 (2.2)	4.94 (2.26)	5.75 (2.33)	4.3 (2.27)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-840-09R	PB-840-10	PB-840-11	PB-840-12	PB-840-13	PB-840-14	PB-840-15	PB-840-16	PB-841-01
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	G04-MW-01-10.0-10.5	PB-840-10-SS01	PB-840-11-SS01	PB-840-12-SS01	PB-840-13-SS01	PB-840-14-SS01	PB-840-15-SS01	PB-840-16-SS01	PB-841-01-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	10.0 - 10.5	3.0 - 3.5	2.5 - 3.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact	Contact	Contact	Contact	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					12/20/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/12/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00052)	ND (0.00055)	0.0084 (0.00039)	ND (0.00053)	ND (0.00059)	ND (0.00054)	ND (0.00055)	ND (0.00044)	ND (0.00064)
Cumene	1000	6.1	87	1000	ND (0.001)	ND (0.0011)	0.0058 (0.00078)	ND (0.0011)	ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	NA	ND (0.00055)	ND (0.00039)	ND (0.00053)	ND (0.00059)	ND (0.00054)	ND (0.00055)	ND (0.00044)	ND (0.00064)
1,2-Dichloroethane	16	0.11	8.1	33	NA	ND (0.0011)	ND (0.00078)	ND (0.0011)	ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.0011)	0.0097 (0.00078)	ND (0.0011)	ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0021)	ND (0.0022)	ND (0.0016)	ND (0.0021)	ND (0.0024)	ND (0.0022)	ND (0.0022)	ND (0.0018)	ND (0.0025)
Toluene	8000	76	650	9800	NA	ND (0.0011)	ND (0.00078)	ND (0.0011)	ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0021)	0.012 (0.0022)	0.072 (0.0016)	ND (0.0021)	ND (0.0024)	ND (0.0022)	ND (0.0022)	ND (0.0018)	ND (0.0025)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0021)	0.0038 (0.0022)	0.04 (0.0016)	ND (0.0021)	ND (0.0024)	ND (0.0022)	ND (0.0022)	ND (0.0018)	ND (0.0025)
Xylenes (total)	240	1.5	51	340	ND (0.001)	0.022 (0.0011)	0.059 (0.00078)	ND (0.0011)	ND (0.0012)	ND (0.0011)	ND (0.0011)	ND (0.00089)	ND (0.0013)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	NA	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	0.11 (0.11)	ND (0.11)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	NA	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	0.18 (0.11)	0.48 (0.11)	0.12 (0.11)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	NA	ND (0.15)	ND (0.16)	ND (0.15)	ND (0.15)	0.18 (0.14)	0.46 (0.14)	0.14 J (0.15)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	NA	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	0.22 (0.11)	0.57 (0.11)	0.18 (0.11)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	NA	ND (0.15)	ND (0.16)	ND (0.15)	ND (0.15)	0.099 J (0.14)	0.22 (0.14)	0.098 J (0.15)	ND (0.14)
Chrysene	43000	--	320000	--	NA	ND (0.11)	0.041 J (0.12)	ND (0.11)	ND (0.11)	0.17 (0.11)	0.44 (0.11)	0.13 (0.11)	ND (0.1)
Fluorene	6200	--	18000	--	NA	ND (0.19)	0.072 J (0.2)	ND (0.19)	ND (0.18)	ND (0.18)	0.05 J (0.18)	ND (0.18)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.19)	ND (0.19)	0.09 J (0.2)	ND (0.19)	ND (0.18)	ND (0.18)	0.091 J (0.18)	ND (0.18)	ND (0.17)
Phenanthrene	4600	--	14000	--	NA	ND (0.11)	0.18 (0.12)	ND (0.11)	ND (0.11)	0.17 (0.11)	0.41 (0.11)	0.14 (0.11)	ND (0.1)
Pyrene	4600	--	14000	--	NA	ND (0.11)	0.031 J (0.12)	ND (0.11)	ND (0.11)	0.28 (0.11)	0.68 (0.11)	0.18 (0.11)	ND (0.1)
Metals													
Lead	2520	--	2520	45000	9.99 (2.27)	5.38 (2.25)	7.06 (2.36)	5.21 (2.26)	6.78 (2.1)	44.4 (2.09)	49.2 (4.3)	53.1 (2.22)	3.27 (2.07)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1

Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-841-02	PB-841-03	PB-841-04	PB-841-05	PB-841-06	PB-841-07	PB-841-08	PB-841-09	PB-841-09
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-841-02-SS01	PB-841-03-SS01	PB-841-04-SS01	PB-841-05-SS01	PB-841-06-SS01	PB-841-07-SS01	PB-841-08-SS01	PB-841-09-SS01	DUP-42
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact	Contact	Contact	Contact	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022
Comments													Field Duplicate
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.0006)	ND (0.00054)	ND (0.00039)	ND (0.0006)	ND (0.00059)	ND (0.00087)	ND (0.00065)	ND (0.0014)	ND (0.00059)
Cumene	1000	6.1	87	1000	ND (0.0012)	ND (0.0011)	ND (0.00078)	ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.0006)	ND (0.00054)	ND (0.00039)	ND (0.0006)	ND (0.00059)	ND (0.00087)	ND (0.00065)	ND (0.0014)	ND (0.00059)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0012)	ND (0.0011)	ND (0.00078)	ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)
Ethyl Benzene	2300	15	1300	820	ND (0.0012)	ND (0.0011)	ND (0.00078)	ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0024)	ND (0.0021)	ND (0.0016)	ND (0.0024)	ND (0.0024)	ND (0.0035)	ND (0.0026)	ND (0.0055)	ND (0.0024)
Toluene	8000	76	650	9800	ND (0.0012)	ND (0.0011)	ND (0.00078)	ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0024)	ND (0.0021)	ND (0.0016)	ND (0.0024)	ND (0.0024)	ND (0.0035)	ND (0.0026)	ND (0.0055)	ND (0.0024)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0024)	ND (0.0021)	ND (0.0016)	ND (0.0024)	ND (0.0024)	ND (0.0035)	ND (0.0026)	ND (0.0055)	ND (0.0024)
Xylenes (total)	240	1.5	51	340	ND (0.0012)	ND (0.0011)	ND (0.00078)	ND (0.0012)	ND (0.0012)	ND (0.0017)	ND (0.0013)	ND (0.0027)	ND (0.0012)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.1)	0.062 J (0.11)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.1)	0.22 (0.11)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.13)	ND (0.14)	ND (0.13)	ND (0.15)	ND (0.16)	ND (0.14)	0.23 (0.15)	ND (0.13)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	0.037 J (0.12)	ND (0.1)	0.28 (0.11)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.13)	ND (0.14)	ND (0.13)	ND (0.15)	ND (0.16)	ND (0.14)	0.11 J (0.15)	ND (0.13)
Chrysene	43000	--	320000	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.1)	0.22 (0.11)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.19)	ND (0.21)	ND (0.17)	0.026 J (0.19)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.19)	ND (0.21)	ND (0.17)	ND (0.19)	ND (0.17)
Phenanthrene	4600	--	14000	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	0.032 J (0.12)	ND (0.1)	0.2 (0.11)	ND (0.1)
Pyrene	4600	--	14000	--	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	0.038 J (0.12)	ND (0.1)	0.35 (0.11)	ND (0.1)
Metals													
Lead	2520	--	2520	45000	3.32 (1.98)	3.07 (2.01)	5.88 (2)	3.54 (2)	4.07 (2.21)	8.11 (2.48)	5 (2.04)	5 (2.17)	3.6 (2)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-841-10	PB-841-11	PB-841-12	PB-841-13	PB-841-14	PB-843-01	PB-843-02	PB-843-03	PB-843-04
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-841-10-SS01	PB-841-11-SS01	PB-841-12-SS01	PB-841-13-SS01	PB-841-14-SS01	PB-843-01-SS01	PB-843-02-SS01	PB-843-03-SS01	PB-843-04-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	4.5 - 5.0	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00061)	ND (0.00069)	0.0002 J (0.00046)	ND (0.00086)	0.00032 J (0.00058)	ND (0.0005)	0.00085 (0.00046)	ND (0.00067)	0.00078 (0.00061)
Cumene	1000	6.1	87	1000	ND (0.0012)	ND (0.0014)	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00061)	ND (0.00069)	ND (0.00046)	ND (0.00086)	ND (0.00058)	ND (0.0005)	ND (0.00046)	ND (0.00067)	ND (0.00061)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0012)	ND (0.0014)	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)
Ethyl Benzene	2300	15	1300	820	ND (0.0012)	ND (0.0014)	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0024)	ND (0.0028)	ND (0.0018)	ND (0.0035)	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.0027)	ND (0.0024)
Toluene	8000	76	650	9800	ND (0.0012)	ND (0.0014)	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0024)	ND (0.0028)	ND (0.0018)	ND (0.0035)	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.0027)	ND (0.0024)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0024)	ND (0.0028)	ND (0.0018)	ND (0.0035)	ND (0.0023)	ND (0.002)	ND (0.0018)	ND (0.0027)	ND (0.0024)
Xylenes (total)	240	1.5	51	340	ND (0.0012)	ND (0.0014)	ND (0.00092)	ND (0.0017)	ND (0.0012)	ND (0.001)	ND (0.00091)	ND (0.0013)	ND (0.0012)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.1)	ND (0.1)	ND (0.11)	0.088 J (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.1)	ND (0.1)	ND (0.11)	0.24 (0.11)	0.035 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.14)	ND (0.15)	0.22 (0.14)	0.044 J (0.14)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.1)	ND (0.1)	ND (0.11)	0.26 (0.11)	0.061 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.14)	ND (0.15)	0.14 (0.14)	0.039 J (0.14)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.1)	ND (0.1)	ND (0.11)	0.21 (0.11)	0.044 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.17)	ND (0.18)	ND (0.19)	0.036 J (0.18)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.17)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.17)	ND (0.18)	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.17)	ND (0.19)
Phenanthrene	4600	--	14000	--	ND (0.1)	ND (0.1)	ND (0.11)	0.39 (0.11)	0.032 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.1)	ND (0.1)	ND (0.11)	0.41 (0.11)	0.054 J (0.11)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	2.76 (2.02)	2.51 (2.06)	3.72 (2.24)	93.9 (2.1)	38.9 (2.08)	3.02 (2.08)	3.41 (2.18)	3.06 (2.08)	5.63 (2.26)

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
3 Underlined concentrations exceed the Routine Worker Soil VI.
4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-843-05	PB-843-06	PB-843-07	PB-843-08	PB-843-09	PB-843-10	PB-843-11	PB-843-11	PB-843-12
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-843-05-SS01	PB-843-06-SS01	PB-843-07-SS01	PB-843-08-SS01	PB-843-09-SS01	PB-843-10-SS01	PB-843-11-SS01	DUP-40	PB-843-12-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	4.5 - 5.0	2.0 - 2.5	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	4.5 - 5.0	4.5 - 5.0	4.0 - 4.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022
Comments												Field Duplicate	
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.0067 (0.00054)	0.0057 (0.00061)	0.00032 J (0.00048)	ND (0.00055)	0.0018 (0.00063)	0.082 (0.00052)	0.00024 J (0.00063)	ND (0.00066)	0.0017 (0.00051)
Cumene	1000	6.1	87	1000	0.00012 J (0.0011)	0.00071 J (0.0012)	0.00016 J (0.00096)	ND (0.0011)	ND (0.0012)	0.00037 J (0.001)	0.00026 J (0.0013)	ND (0.0013)	0.00045 J (0.001)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00054)	ND (0.00061)	ND (0.00048)	ND (0.00055)	ND (0.00063)	ND (0.00052)	ND (0.00063)	ND (0.00066)	ND (0.00051)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.0012)	ND (0.00096)	ND (0.0011)	ND (0.0012)	ND (0.001)	ND (0.0013)	ND (0.0013)	ND (0.001)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.0012)	0.00071 J (0.00096)	ND (0.0011)	ND (0.0012)	ND (0.001)	ND (0.0013)	ND (0.0013)	ND (0.001)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	0.00037 J (0.0024)	0.00047 J (0.0019)	ND (0.0022)	ND (0.0025)	0.0012 J (0.0021)	0.00045 J (0.0025)	ND (0.0026)	0.0009 J (0.002)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.0012)	0.002 (0.00096)	ND (0.0011)	ND (0.0012)	ND (0.001)	ND (0.0013)	ND (0.0013)	ND (0.001)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	ND (0.0024)	0.0018 J (0.0019)	ND (0.0022)	ND (0.0025)	ND (0.0021)	ND (0.0025)	ND (0.0026)	ND (0.002)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	ND (0.0024)	0.0011 J (0.0019)	ND (0.0022)	ND (0.0025)	ND (0.0021)	ND (0.0025)	ND (0.0026)	ND (0.002)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.0012)	0.0049 (0.00096)	ND (0.0011)	ND (0.0012)	0.007 (0.001)	ND (0.0013)	ND (0.0013)	ND (0.001)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.11)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.11)	0.037 J (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	0.022 J (0.12)	ND (0.11)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.11)	0.033 J (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.11)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.11)	0.1 J (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.11)
Fluorene	6200	--	18000	--	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.18)	ND (0.2)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.18)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.19)	ND (0.19)	0.038 J (0.19)	ND (0.18)	ND (0.2)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.18)
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	0.026 J (0.12)	ND (0.11)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.11)	0.14 (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.11)	0.026 J (0.12)	ND (0.11)
Metals													
Lead	2520	--	2520	45000	6.17 (4.48)	6.13 (2.22)	14.2 (2.21)	3.99 (2.03)	18.3 (2.32)	5.3 (2.21)	5.83 (2.25)	18 (4.67)	8.48 (2.15)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-843-13	PB-843-14	PB-843-15	PB-843-16	PB-843-17	PB-847-01	PB-847-02	PB-847-02	PB-847-03
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-843-13-SS01	PB-843-14-SS01	PB-843-15-SS01	PB-843-16-SS01	PB-843-17-SS01	PB-847-01-SS01	PB-847-02-SS01	PB-847-02	PB-847-03
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	4.0 - 4.5	4.5 - 5.0	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022
Comments												Field Duplicate	
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00051)	0.00035 J (0.00049)	ND (0.00048)	ND (0.00048)	0.00024 J (0.00057)	ND (0.00043)	ND (0.00046)	ND (0.00044)	ND (0.00045)
Cumene	1000	6.1	87	1000	ND (0.001)	0.00017 J (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	ND (0.00089)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00051)	ND (0.00049)	ND (0.00048)	ND (0.00048)	ND (0.00057)	ND (0.00043)	ND (0.00046)	ND (0.00044)	ND (0.00045)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.001)	ND (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	ND (0.00089)
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	ND (0.00089)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.002)	0.0006 J (0.002)	ND (0.0019)	ND (0.0019)	0.00055 J (0.0023)	ND (0.0017)	ND (0.0018)	ND (0.0018)	ND (0.0018)
Toluene	8000	76	650	9800	ND (0.001)	ND (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	ND (0.00089)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.002)	ND (0.002)	ND (0.0019)	ND (0.0019)	ND (0.0023)	ND (0.0017)	ND (0.0018)	ND (0.0018)	ND (0.0018)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.002)	ND (0.002)	ND (0.0019)	ND (0.0019)	ND (0.0023)	ND (0.0017)	ND (0.0018)	ND (0.0018)	ND (0.0018)
Xylenes (total)	240	1.5	51	340	ND (0.001)	ND (0.00099)	ND (0.00097)	ND (0.00097)	ND (0.0011)	ND (0.00085)	ND (0.00093)	ND (0.00089)	ND (0.00089)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.12)	0.05 J (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.12)	0.24 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.15)	0.23 (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.12)	0.27 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.15)	0.12 J (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.12)	0.24 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)
Fluorene	6200	--	18000	--	ND (0.18)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.18)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.19)
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.12)	0.19 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.12)	0.39 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)
Metals													
Lead	2520	--	2520	45000	3.21 (2.08)	11.2 (2.24)	92 (2.26)	48.6 (4.56)	11 (2.38)	6.08 (2.37)	4.67 (2.42)	4.52 (2.34)	4.07 (2.17)

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
3 Underlined concentrations exceed the Routine Worker Soil VI.
4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-847-04	PB-847-05	PB-847-06	PB-847-07	PB-847-08	PB-847-09	PB-847-10	PB-847-11	PB-847-12
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-847-04-SS01	PB-847-05-SS01	PB-847-06-SS01	PB-847-07-SS01	PB-847-08-SS01	PB-847-09-SS01	PB-847-10-SS01	PB-847-11-SS01	PB-847-12-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	4.0 - 4.5	3.5 - 4.0	4.0 - 4.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0
Sample Method	Contact	Contact	Contact	Contact	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022	7/8/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00044)	ND (0.00043)	ND (0.00043)	0.00029 J (0.00052)	ND (0.00045)	0.00024 J (0.00058)	ND (0.00049)	0.00047 J (0.00049)	ND (0.00043)
Cumene	1000	6.1	87	1000	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	0.00012 J (0.00098)	0.013 (0.00087)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00044)	ND (0.00043)	ND (0.00043)	ND (0.00052)	ND (0.00045)	ND (0.00058)	ND (0.00049)	ND (0.00049)	ND (0.00043)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	ND (0.00098)	ND (0.00087)
Ethyl Benzene	2300	15	1300	820	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	ND (0.00098)	0.0028 (0.00087)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0018)	ND (0.0017)	ND (0.0017)	ND (0.0021)	ND (0.0018)	ND (0.0023)	ND (0.002)	0.0035 (0.002)	ND (0.0017)
Toluene	8000	76	650	9800	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	ND (0.00098)	ND (0.00087)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0018)	ND (0.0017)	ND (0.0017)	ND (0.0021)	ND (0.0018)	ND (0.0023)	ND (0.002)	ND (0.002)	0.02 (0.0017)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0018)	ND (0.0017)	ND (0.0017)	ND (0.0021)	ND (0.0018)	ND (0.0023)	ND (0.002)	ND (0.002)	0.054 (0.0017)
Xylenes (total)	240	1.5	51	340	ND (0.00088)	ND (0.00087)	ND (0.00086)	ND (0.001)	ND (0.0009)	ND (0.0012)	ND (0.00098)	ND (0.00098)	0.0009 J (0.00087)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.17)	ND (0.16)	ND (0.15)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.17)	ND (0.16)	ND (0.15)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.21)	ND (0.2)	ND (0.19)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.19)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.21)	ND (0.2)	ND (0.19)	ND (0.19)
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	ND (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.13)	ND (0.12)	ND (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	3.69 (2.26)	3.51 (2.23)	4.69 (2.31)	5.3 (4.63)	4.46 (2.36)	4.13 (2.5)	5.37 (4.8)	4.97 (4.44)	6.35 (4.54)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-847-13	PB-847-14	PB-847-15	PB-847-15R	PB-847-15R	PB-847-16	PB-847-17	PB-848-01	PB-848-02
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-847-13-SS01	PB-847-14-SS01	PB-847-15-SS01	PB-847-15R-6.0-6.5	PB-847-15R-17.0-17.5	PB-847-16-SS01	PB-847-17-SS01	PB-848-01-SS01	PB-848-02-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	4.0 - 4.5	3.5 - 4.0	4.0 - 4.5	6.0 - 6.5	17.0 - 17.5	3.0 - 3.5	3.5 - 4.0	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/8/2022	7/8/2022	7/8/2022	1/4/2023	1/4/2023	7/8/2022	7/8/2022	7/11/2022	7/11/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.051 J (0.11)	ND (0.12)	0.063 J (0.12)	ND (0.032)	0.16 (0.026)	ND (0.00047)	0.0042 (0.00053)	0.001 (0.00058)	ND (0.00047)
Cumene	1000	6.1	87	1000	0.94 (0.21)	1.3 (0.25)	1.2 (0.23)	3.2 (0.064)	1.1 (0.051)	ND (0.00094)	0.027 (0.0011)	0.00014 J (0.0012)	ND (0.00094)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.11)	ND (0.12)	ND (0.12)	NA	NA	ND (0.00047)	ND (0.00053)	ND (0.00058)	ND (0.00047)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.21)	ND (0.25)	ND (0.23)	NA	NA	ND (0.00094)	ND (0.0011)	ND (0.0012)	ND (0.00094)
Ethyl Benzene	2300	15	1300	820	0.2 J (0.21)	ND (0.25)	0.24 (0.23)	5.4 (0.064)	0.018 J (0.051)	ND (0.00094)	0.018 (0.0011)	ND (0.0012)	ND (0.00094)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.43)	ND (0.5)	ND (0.46)	ND (0.13)	ND (0.1)	ND (0.0019)	ND (0.0021)	ND (0.0023)	ND (0.0019)
Toluene	8000	76	650	9800	ND (0.21)	ND (0.25)	ND (0.23)	NA	NA	ND (0.00094)	0.00073 J (0.0011)	ND (0.0012)	ND (0.00094)
1,2,4-Trimethylbenzene	180	0.92	70	250	<u>2.2 (0.43)</u>	ND (0.5)	<u>2.8 (0.46)</u>	<u>5.1 (0.13)</u>	ND (0.1)	ND (0.0019)	0.11 (0.0021)	ND (0.0023)	ND (0.0019)
1,3,5-Trimethylbenzene	220	0.92	99	240	<u>1.4 (0.43)</u>	ND (0.5)	<u>1.8 (0.46)</u>	<u>3.2 (0.13)</u>	0.016 J (0.1)	ND (0.0019)	0.0088 (0.0021)	0.00026 J (0.0023)	ND (0.0019)
Xylenes (total)	240	1.5	51	340	0.23 J (0.21)	ND (0.25)	0.27 J (0.23)	<u>2.5 (0.064)</u>	ND (0.051)	ND (0.00094)	0.017 (0.0011)	0.0016 J (0.0012)	ND (0.00094)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	1.7 (1.1)	NA	NA	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (1.1)	NA	NA	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.16)	ND (1.5)	NA	NA	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (1.1)	NA	NA	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.16)	ND (1.5)	NA	NA	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	ND (1.1)	NA	NA	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	0.12 J (0.19)	ND (0.2)	5.3 (1.9)	NA	NA	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.13 J (0.19)	0.043 J (0.2)	<u>7 (1.9)</u>	<u>7.5 (0.04)</u>	1.6 (0.038)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.19)
Phenanthrene	4600	--	14000	--	0.29 (0.12)	ND (0.12)	12 (1.1)	NA	NA	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	0.5 J (1.1)	NA	NA	ND (0.12)	ND (0.12)	ND (0.12)	0.029 J (0.12)
Metals													
Lead	2520	--	2520	45000	3.88 (2.3)	5.24 (4.85)	5.06 (4.52)	6.75 (2.37)	5.9 (2.26)	5.17 (2.4)	5.26 (4.7)	6.75 (2.41)	26.2 (4.38)

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
3 Underlined concentrations exceed the Routine Worker Soil VI.
4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-848-03	PB-848-04	PB-848-05	PB-848-05	PB-848-06	PB-848-07	PB-848-07R	PB-848-08	PB-848-09
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-848-03-SS01	PB-848-04-SS01	PB-848-05-SS01	DUP-39	PB-848-06-SS01	PB-848-07-SS01	TG04-MW-02-7.0-7.5	PB-848-08-SS01	PB-848-09-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	4.5 - 5.0	7.0 - 7.5	4.5 - 5.0	4.5 - 5.0
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	12/19/2022	7/11/2022	7/11/2022
Comments								Field Duplicate					
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00055)	<u>1.8 (0.13)</u>	ND (0.00056)	ND (0.00049)	ND (0.032)	0.14 (0.034)	0.0023 (0.00056)	0.0003 J (0.00046)	0.00022 J (0.00049)
Cumene	1000	6.1	87	1000	ND (0.0011)	0.46 (0.25)	ND (0.0011)	ND (0.00098)	3 (0.064)	1.1 (0.067)	0.015 (0.0011)	0.0099 (0.00092)	0.0011 (0.00098)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00055)	ND (0.13)	ND (0.00056)	ND (0.00049)	ND (0.032)	ND (0.034)	NA	ND (0.00046)	ND (0.00049)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.25)	ND (0.0011)	ND (0.00098)	ND (0.064)	ND (0.067)	NA	ND (0.00092)	ND (0.00098)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	0.9 (0.25)	ND (0.0011)	ND (0.00098)	1 (0.064)	1.6 (0.067)	0.028 (0.0011)	0.0067 (0.00092)	0.00046 J (0.00098)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	ND (0.51)	0.00074 J (0.0022)	0.00057 J (0.002)	ND (0.13)	ND (0.13)	0.00026 J (0.0022)	ND (0.0018)	ND (0.002)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.25)	ND (0.0011)	ND (0.00098)	ND (0.064)	0.087 (0.067)	NA	ND (0.00092)	ND (0.00098)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	<u>4.3 (0.51)</u>	ND (0.0022)	ND (0.002)	<u>35 (1.3)</u>	<u>2.2 (0.13)</u>	0.0016 J (0.0022)	0.037 (0.0018)	0.0013 J (0.002)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	<u>2.7 (0.51)</u>	ND (0.0022)	ND (0.002)	0.16 (0.13)	<u>1 (0.13)</u>	0.0059 (0.0022)	0.0047 (0.0018)	0.00028 J (0.002)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	<u>3.8 (0.25)</u>	ND (0.0011)	ND (0.00098)	ND (0.064)	0.56 J (0.067)	0.0027 J (0.0011)	0.0013 J (0.00092)	0.00093 J (0.00098)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	0.29 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	NA	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.12)	ND (0.12)	0.055 J (0.12)	ND (0.12)	0.025 J (0.12)	NA	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.16)	ND (0.16)	0.048 J (0.16)	ND (0.16)	0.065 J (0.16)	NA	ND (0.16)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.12)	ND (0.12)	0.053 J (0.12)	ND (0.12)	0.049 J (0.12)	NA	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.16)	ND (0.16)	0.026 J (0.16)	ND (0.16)	0.064 J (0.16)	NA	ND (0.16)	ND (0.16)
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.12)	ND (0.12)	0.048 J (0.12)	ND (0.12)	0.028 J (0.12)	NA	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.18)	2.3 (0.2)	0.069 J (0.2)	ND (0.2)	0.14 J (0.2)	0.089 J (0.2)	NA	ND (0.2)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.18)	<u>1.4 (0.2)</u>	0.034 J (0.2)	ND (0.2)	<u>1.7 (0.2)</u>	0.26 (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Phenanthrene	4600	--	14000	--	ND (0.11)	1.9 (0.12)	0.054 J (0.12)	0.091 J (0.12)	0.15 (0.12)	0.059 J (0.12)	NA	ND (0.12)	0.034 J (0.12)
Pyrene	4600	--	14000	--	0.024 J (0.11)	ND (0.12)	ND (0.12)	0.08 J (0.12)	ND (0.12)	ND (0.12)	NA	ND (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	51.6 (4.24)	716 (2.44)	8.21 (4.59)	18.8 (2.22)	7.2 (2.39)	3200 (4.73)	7.5 (2.25)	246 (4.7)	1140 (2.41)

Notes:
1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
3 Underlined concentrations exceed the Routine Worker Soil VI.
4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-848-10	PB-848-11	PB-848-12	PB-848-13	PB-848-14	PB-848-15	PB-848-16	PB-848-17	PB-848-18
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-848-10-SS01	PB-848-11-SS01	PB-848-12-SS01	PB-848-13-SS01	PB-848-14-SS01	PB-848-15-SS01	PB-848-16-SS01	PB-848-17-SS01	PB-848-18-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	4.5 - 5.0	3.0 - 3.5	4.0 - 4.5	4.5 - 5.0	4.5 - 5.0	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.00052 J (0.00063)	<u>0.87 (0.034)</u>	ND (0.00055)	ND (0.036)	0.00019 J (0.00056)	<u>1.1 (0.028)</u>	ND (0.0006)	ND (0.00077)	0.01 J (0.027)
Cumene	1000	6.1	87	1000	0.0066 (0.0012)	0.29 (0.068)	ND (0.0011)	0.01 J (0.072)	0.00079 J (0.0011)	2.4 (0.055)	ND (0.0012)	ND (0.0015)	0.06 (0.054)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00063)	ND (0.034)	ND (0.00055)	ND (0.036)	ND (0.00056)	ND (0.028)	ND (0.0006)	ND (0.00077)	ND (0.027)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0012)	ND (0.068)	ND (0.0011)	ND (0.072)	ND (0.0011)	ND (0.055)	ND (0.0012)	ND (0.0015)	ND (0.054)
Ethyl Benzene	2300	15	1300	820	0.0024 (0.0012)	0.16 (0.068)	ND (0.0011)	0.018 J (0.072)	0.00017 J (0.0011)	<u>16 (0.055)</u>	ND (0.0012)	ND (0.0015)	0.017 J (0.054)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0025)	ND (0.14)	ND (0.0022)	ND (0.14)	ND (0.0023)	ND (0.11)	ND (0.0024)	ND (0.0031)	ND (0.11)
Toluene	8000	76	650	9800	ND (0.0012)	0.12 (0.068)	ND (0.0011)	0.039 J (0.072)	ND (0.0011)	0.078 (0.055)	ND (0.0012)	ND (0.0015)	ND (0.054)
1,2,4-Trimethylbenzene	180	0.92	70	250	0.00081 J (0.0025)	0.12 J (0.14)	ND (0.0022)	ND (0.14)	ND (0.0023)	<u>7.7 (0.11)</u>	ND (0.0024)	ND (0.0031)	0.058 J (0.11)
1,3,5-Trimethylbenzene	220	0.92	99	240	0.00047 J (0.0025)	0.076 J (0.14)	ND (0.0022)	ND (0.14)	ND (0.0023)	<u>4 (0.11)</u>	ND (0.0024)	ND (0.0031)	0.011 J (0.11)
Xylenes (total)	240	1.5	51	340	ND (0.0012)	0.39 J (0.068)	ND (0.0011)	ND (0.072)	ND (0.0011)	<u>38 J (0.055)</u>	ND (0.0012)	ND (0.0015)	0.056 J (0.054)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.14)	0.081 J (0.11)	0.19 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	0.09 J (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.14)	0.029 J (0.11)	0.33 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	4.5 (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.18)	ND (0.15)	0.3 (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	7.2 (0.16)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.14)	0.037 J (0.11)	0.36 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	4.4 (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.18)	0.039 J (0.15)	0.11 J (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	5.2 (0.16)	ND (0.16)
Chrysene	43000	--	320000	--	ND (0.14)	0.034 J (0.11)	0.3 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	4.4 (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.23)	0.25 (0.19)	0.13 J (0.21)	ND (0.2)	ND (0.21)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.23)	ND (0.19)	0.043 J (0.21)	ND (0.2)	ND (0.21)	ND (0.2)	ND (0.2)	0.026 J (0.2)	ND (0.2)
Phenanthrene	4600	--	14000	--	ND (0.14)	0.35 (0.11)	0.68 (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	0.34 (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.14)	0.058 J (0.11)	0.51 (0.12)	0.022 J (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	0.79 (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	721 (5.48)	15 (2.24)	282 (2.36)	28.5 (2.46)	15.7 (2.42)	9.28 (2.29)	6.41 (2.32)	1840 (2.29)	60.7 (11.4)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-881-01	PB-881-02	PB-881-03	PB-881-04	PB-881-05	PB-881-06	PB-881-07	PB-881-07	PB-881-08
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-881-01-SS01	PB-881-02-SS01	PB-881-03-SS01	PB-881-04-SS01	PB-881-05-SS01	PB-881-06-SS01	PB-881-07-SS01	DUP-41	PB-881-08-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	2.0 - 2.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022
Comments												Field Duplicate	
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00043)	ND (0.00053)	ND (0.00046)	ND (0.00051)	ND (0.00049)	ND (0.00056)	ND (0.021)	ND (0.032)	ND (0.00058)
Cumene	1000	6.1	87	1000	0.0032 (0.00087)	ND (0.001)	ND (0.00093)	ND (0.001)	ND (0.00098)	ND (0.0011)	0.0089 J (0.042)	0.012 J (0.065)	ND (0.0012)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00043)	ND (0.00053)	ND (0.00046)	ND (0.00051)	ND (0.00049)	ND (0.00056)	ND (0.021)	ND (0.032)	ND (0.00058)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00087)	ND (0.001)	ND (0.00093)	ND (0.001)	ND (0.00098)	ND (0.0011)	ND (0.042)	ND (0.065)	ND (0.0012)
Ethyl Benzene	2300	15	1300	820	ND (0.00087)	ND (0.001)	ND (0.00093)	ND (0.001)	ND (0.00098)	ND (0.0011)	ND (0.042)	ND (0.065)	ND (0.0012)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0017)	ND (0.0021)	ND (0.0019)	ND (0.002)	0.0012 J (0.002)	ND (0.0022)	ND (0.084)	ND (0.13)	ND (0.0023)
Toluene	8000	76	650	9800	ND (0.00087)	ND (0.001)	ND (0.00093)	ND (0.001)	ND (0.00098)	ND (0.0011)	ND (0.042)	ND (0.065)	ND (0.0012)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.13)	ND (0.0021)	ND (0.0019)	ND (0.002)	ND (0.002)	ND (0.0022)	0.47 (0.084)	<u>1 (0.13)</u>	ND (0.0023)
1,3,5-Trimethylbenzene	220	0.92	99	240	0.091 (0.0017)	ND (0.0021)	ND (0.0019)	ND (0.002)	ND (0.002)	ND (0.0022)	0.22 (0.084)	0.45 (0.13)	ND (0.0023)
Xylenes (total)	240	1.5	51	340	0.055 (0.00087)	ND (0.001)	ND (0.00093)	ND (0.001)	ND (0.00098)	ND (0.0011)	0.038 J (0.042)	0.037 J (0.065)	ND (0.0012)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.52)	ND (0.1)	0.097 J (0.1)	0.047 J (0.11)	ND (0.11)	ND (0.1)	0.04 J (0.1)	0.063 J (0.11)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.52)	ND (0.1)	0.04 J (0.1)	0.23 (0.11)	ND (0.11)	ND (0.1)	0.022 J (0.1)	0.031 J (0.11)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.7)	ND (0.14)	ND (0.14)	0.25 (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.52)	ND (0.1)	ND (0.1)	0.29 (0.11)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.7)	ND (0.14)	ND (0.14)	0.14 J (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)
Chrysene	43000	--	320000	--	0.22 J (0.52)	ND (0.1)	0.2 (0.1)	0.22 (0.11)	ND (0.11)	ND (0.1)	0.087 J (0.1)	0.15 (0.11)	ND (0.12)
Fluorene	6200	--	18000	--	0.19 J (0.88)	ND (0.17)	0.51 (0.17)	0.018 J (0.19)	ND (0.19)	ND (0.17)	0.23 (0.17)	0.41 (0.18)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.26 J (0.88)	ND (0.17)	<u>1.2 (0.17)</u>	0.048 J (0.19)	ND (0.19)	ND (0.17)	0.048 J (0.17)	<u>0.6 (0.18)</u>	ND (0.2)
Phenanthrene	4600	--	14000	--	0.16 J (0.52)	ND (0.1)	1 (0.1)	0.21 (0.11)	ND (0.11)	ND (0.1)	0.48 (0.1)	0.88 (0.11)	ND (0.12)
Pyrene	4600	--	14000	--	0.15 J (0.52)	ND (0.1)	0.15 (0.1)	0.28 (0.11)	ND (0.11)	ND (0.1)	0.064 J (0.1)	0.1 J (0.11)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	1.62 J (2)	1.49 J (2.04)	1.78 J (4.15)	89.2 (22.8)	7.7 (2.2)	1.45 J (2.02)	1.48 J (1.98)	1.48 J (2.05)	6.67 (2.43)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-881-09	PB-881-10	PB-881-11	PB-881-12	PB-881-13	PB-881-14	PB-881-15	PB-881-16	PB-881-17
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-881-09-SS01	PB-881-10-SS01	PB-881-11-SS01	PB-881-12-SS01	PB-881-13-SS01	PB-881-14-SS01	PB-881-15-SS01	PB-881-16-SS01	PB-881-17-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00058)	ND (0.052)	ND (0.00053)	ND (0.00051)	ND (0.00049)	ND (0.00045)	ND (0.00048)	ND (0.00051)	ND (0.0005)
Cumene	1000	6.1	87	1000	ND (0.0012)	0.26 (0.1)	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	0.00017 J (0.001)	ND (0.001)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00058)	ND (0.052)	ND (0.00053)	ND (0.00051)	ND (0.00049)	ND (0.00045)	ND (0.00048)	ND (0.00051)	ND (0.0005)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0012)	ND (0.1)	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	ND (0.001)	ND (0.001)
Ethyl Benzene	2300	15	1300	820	ND (0.0012)	0.067 J (0.1)	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	ND (0.001)	ND (0.001)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0023)	ND (0.21)	ND (0.0021)	ND (0.002)	ND (0.002)	ND (0.0018)	0.00054 J (0.0019)	ND (0.002)	ND (0.002)
Toluene	8000	76	650	9800	ND (0.0012)	ND (0.1)	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	ND (0.001)	ND (0.001)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0023)	<u>9.4 (0.21)</u>	ND (0.0021)	ND (0.002)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.002)	ND (0.002)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0023)	<u>3.6 (0.21)</u>	ND (0.0021)	ND (0.002)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.002)	ND (0.002)
Xylenes (total)	240	1.5	51	340	ND (0.0012)	0.46 J (0.1)	ND (0.0011)	ND (0.001)	ND (0.00099)	ND (0.0009)	ND (0.00096)	ND (0.001)	ND (0.001)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.51)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	0.17 J (0.51)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.69)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.16)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.51)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.69)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.16)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.12)	0.34 J (0.51)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.2)	1.1 (0.86)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.2)	ND (0.2)	ND (0.18)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.2)	<u>4.4 (0.86)</u>	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.2)	ND (0.2)	ND (0.18)
Phenanthrene	4600	--	14000	--	ND (0.12)	1.9 (0.51)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)
Pyrene	4600	--	14000	--	ND (0.12)	0.23 J (0.51)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.1)
Metals													
Lead	2520	--	2520	45000	6.12 (2.29)	1.22 J (2.04)	2.35 J (4.14)	1.4 J (2.06)	2.2 J (4.2)	2.02 J (3.98)	5.85 (2.36)	10.7 (4.8)	1.4 J (2.05)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-881-18	PB-882-01	PB-882-02	PB-882-03	PB-882-04	PB-882-05	PB-882-06	PB-882-07	PB-882-08
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-881-18-SS01	PB-882-01-SS01	PB-882-02-SS01	PB-882-03-SS01	PB-882-04-SS01	PB-882-05-SS01	PB-882-06-SS01	PB-882-07-SS01	PB-882-08-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/12/2022	7/29/2021	7/29/2021	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022	7/13/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00049)	ND (0.00052)	ND (0.00047)	ND (0.00045)	0.00058 (0.00048)	ND (0.0005)	ND (0.00045)	ND (0.00046)	ND (0.00045)
Cumene	1000	6.1	87	1000	ND (0.00098)	ND (0.001)	ND (0.00095)	ND (0.0009)	ND (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	0.039 (0.00089)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00049)	ND (0.00052)	ND (0.00047)	ND (0.00045)	ND (0.00048)	ND (0.0005)	ND (0.00045)	ND (0.00046)	ND (0.00045)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00098)	ND (0.001)	ND (0.00095)	ND (0.0009)	ND (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	ND (0.00089)
Ethyl Benzene	2300	15	1300	820	ND (0.00098)	ND (0.001)	ND (0.00095)	ND (0.0009)	0.00014 J (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	0.017 (0.00089)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.002)	ND (0.0021)	ND (0.0019)	ND (0.0018)	ND (0.0019)	ND (0.002)	ND (0.0018)	ND (0.0018)	ND (0.0018)
Toluene	8000	76	650	9800	ND (0.00098)	ND (0.001)	ND (0.00095)	ND (0.0009)	ND (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	ND (0.00089)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.002)	ND (0.0021)	ND (0.0019)	ND (0.0018)	0.00096 J (0.0019)	ND (0.002)	ND (0.0018)	ND (0.0018)	0.041 (0.0018)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.002)	ND (0.0021)	ND (0.0019)	ND (0.0018)	0.00038 J (0.0019)	ND (0.002)	ND (0.0018)	ND (0.0018)	0.016 (0.0018)
Xylenes (total)	240	1.5	51	340	ND (0.00098)	ND (0.001)	ND (0.00095)	ND (0.0009)	0.0006 J (0.00095)	ND (0.001)	ND (0.00091)	ND (0.00091)	0.0045 (0.00089)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.1)	ND (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	0.041 J (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.1)	0.0014 J (0.0078)	0.00094 J (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	ND (0.0078)	ND (0.0072)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.1)	0.00078 J (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	ND (0.0078)	ND (0.0072)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.1)	0.00066 J (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.17)	ND (0.0078)	ND (0.0072)	ND (0.2)	ND (0.19)	ND (0.18)	ND (0.19)	ND (0.19)	0.4 (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.17)	ND (0.0078)	ND (0.0072)	ND (0.2)	ND (0.19)	ND (0.18)	ND (0.19)	ND (0.19)	<u>1.6 (0.19)</u>
Phenanthrene	4600	--	14000	--	ND (0.1)	0.00093 J (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	0.78 (0.12)
Pyrene	4600	--	14000	--	ND (0.1)	0.0014 J (0.0078)	ND (0.0072)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	1.46 J (2.05)	4.2 (2.4)	5.3 (2.3)	9.65 (4.74)	6.1 (4.59)	5.09 (4.5)	5.96 (4.56)	5.62 (4.66)	3.78 J (4.65)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-882-09	PB-882-10	PB-882-11	PB-882-12	PB-882-13	PB-882-14	PB-882-15	PB-882-16	PB-882-17
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-882-09-SS01	PB-882-10-SS01	PB-882-11-SS01	PB-882-12-SS01	PB-882-13-SS01	PB-882-14-SS01	PB-882-15-SS01	PB-882-16-SS01	PB-882-17-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.5 - 4.0	4.0 - 4.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/13/2022	7/30/2021	7/13/2022	7/13/2022	7/13/2022	7/30/2021	7/30/2021	7/30/2021	7/30/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00054)	ND (0.095)	0.00032 J (0.00043)	0.00037 J (0.00043)	ND (0.00046)	ND (0.0005)	ND (0.0005)	ND (0.05)	ND (0.00054)
Cumene	1000	6.1	87	1000	0.042 (0.0011)	1.2 (0.19)	0.0001 J (0.00087)	ND (0.00085)	ND (0.00092)	0.0031 (0.001)	ND (0.001)	<u>6.4 (0.1)</u>	ND (0.0011)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00054)	ND (0.095)	ND (0.00043)	ND (0.00043)	ND (0.00046)	ND (0.0005)	ND (0.0005)	ND (0.05)	ND (0.00054)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.19)	ND (0.00087)	ND (0.00085)	ND (0.00092)	ND (0.001)	ND (0.001)	ND (0.1)	ND (0.0011)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.19)	ND (0.00087)	ND (0.00085)	ND (0.00092)	ND (0.001)	ND (0.001)	<u>17 (0.1)</u>	ND (0.0011)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	ND (0.38)	0.0016 J (0.0017)	ND (0.0017)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.2)	ND (0.0022)
Toluene	8000	76	650	9800	0.00079 J (0.0011)	ND (0.19)	ND (0.00087)	ND (0.00085)	ND (0.00092)	ND (0.001)	ND (0.001)	ND (0.1)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	ND (0.38)	ND (0.0017)	ND (0.0017)	ND (0.0018)	0.0077 (0.002)	ND (0.002)	<u>64 (1)</u>	ND (0.0022)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	ND (0.38)	ND (0.0017)	ND (0.0017)	ND (0.0018)	0.005 (0.002)	ND (0.002)	<u>18 (0.2)</u>	ND (0.0022)
Xylenes (total)	240	1.5	51	340	0.0014 (0.0011)	ND (0.19)	ND (0.00087)	ND (0.00085)	ND (0.00092)	ND (0.001)	ND (0.001)	<u>39 (0.1)</u>	ND (0.0011)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	0.076 J (0.12)	0.068 (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.016)	0.024 (0.008)	ND (0.077)	ND (0.014)
Benzo(a)anthracene	430	--	3200	--	0.024 J (0.12)	0.022 J (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.035 (0.016)	0.03 (0.008)	0.07 J (0.077)	0.0069 J (0.014)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	0.014 J (0.036)	ND (0.15)	ND (0.15)	ND (0.15)	0.018 (0.016)	0.019 (0.008)	0.036 J (0.077)	0.002 J (0.014)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	0.028 J (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.02 (0.016)	0.024 (0.008)	0.047 J (0.077)	0.0048 J (0.014)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	0.018 J (0.036)	ND (0.15)	ND (0.15)	ND (0.15)	0.0097 J (0.016)	0.0076 J (0.008)	0.035 J (0.077)	0.002 J (0.014)
Chrysene	43000	--	320000	--	0.094 J (0.12)	0.27 (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.16 (0.016)	0.023 (0.008)	0.44 (0.077)	0.028 (0.014)
Fluorene	6200	--	18000	--	0.99 (0.2)	0.57 (0.036)	ND (0.19)	ND (0.19)	ND (0.19)	0.29 (0.016)	0.015 (0.008)	0.78 (0.077)	0.088 (0.014)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.06 J (0.2)	0.16 (0.036)	ND (0.19)	ND (0.19)	ND (0.19)	0.13 (0.016)	0.0094 (0.008)	<u>4.2 (0.077)</u>	0.0096 J (0.014)
Phenanthrene	4600	--	14000	--	1.7 (0.12)	1.4 (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.84 (0.016)	0.079 (0.008)	2.3 (0.077)	0.11 (0.014)
Pyrene	4600	--	14000	--	0.062 J (0.12)	0.083 (0.036)	ND (0.12)	ND (0.12)	ND (0.11)	0.05 (0.016)	0.047 (0.008)	0.16 (0.077)	0.0089 J (0.014)
Metals													
Lead	2520	--	2520	45000	4.45 J (4.8)	ND (12)	5.69 (4.61)	7.37 (4.65)	5.83 (4.54)	7 (2.5)	19.4 (2.5)	11.3 (2.3)	3.9 (2.3)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-882-18	PB-882-19	PB-882-20	PB-883-01	PB-883-02	PB-883-03	PB-883-04	PB-883-05	PB-883-06
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-882-18-SS01	PB-882-19-SS01	PB-882-20-SS01	PB-883-01-SS01	PB-883-02-SS01	PB-883-03-SS01	PB-883-04-SS01	PB-883-05-SS01	PB-883-06-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	4.0 - 4.5
Sample Method	Contact	Contact	Contact	Contact	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date	Contact	Contact	Contact	Contact	7/30/2021	7/30/2021	7/30/2021	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022
Comments	Contact	Contact	Contact	Contact	Contact	Contact	Contact	Contact	Contact	Contact	Contact	Contact	Contact
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00054)	ND (0.00055)	ND (0.00051)	0.00026 J (0.00052)	ND (0.00051)	0.00041 (0.00041)	ND (0.00049)	0.0003 J (0.00045)	ND (0.00053)
Cumene	1000	6.1	87	1000	ND (0.0011)	ND (0.0011)	ND (0.001)	0.00018 J (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)	0.0002 J (0.00091)	ND (0.001)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00054)	ND (0.00055)	ND (0.00051)	ND (0.00052)	ND (0.00051)	ND (0.00041)	ND (0.00049)	ND (0.00045)	ND (0.00053)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)	ND (0.00091)	ND (0.001)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)	ND (0.00091)	ND (0.001)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	ND (0.0022)	ND (0.002)	0.00032 J (0.0021)	0.0018 J (0.002)	0.002 (0.0016)	ND (0.002)	0.0042 (0.0018)	0.00048 J (0.0021)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)	ND (0.00091)	ND (0.001)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	ND (0.0022)	ND (0.002)	ND (0.0021)	ND (0.002)	ND (0.0016)	ND (0.002)	0.00034 J (0.0018)	ND (0.0021)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	ND (0.0022)	ND (0.002)	ND (0.0021)	ND (0.002)	ND (0.0016)	ND (0.002)	0.00084 J (0.0018)	ND (0.0021)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.00082)	ND (0.00098)	ND (0.00091)	ND (0.001)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	0.00075 J (0.0079)	ND (0.0082)	ND (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.0079)	ND (0.0082)	0.076 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.0079)	ND (0.0082)	0.04 (0.016)	ND (0.16)	ND (0.16)	ND (0.15)	ND (0.16)	ND (0.15)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.0079)	ND (0.0082)	0.074 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.0079)	ND (0.0082)	0.038 (0.016)	ND (0.16)	ND (0.16)	ND (0.15)	ND (0.16)	ND (0.15)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.0079)	ND (0.0082)	0.42 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.0079)	ND (0.0082)	0.46 (0.016)	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.0079)	ND (0.0082)	0.062 (0.016)	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)
Phenanthrene	4600	--	14000	--	0.0041 J (0.0079)	0.0014 J (0.0082)	1.2 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	0.002 J (0.0079)	ND (0.0082)	0.14 (0.016)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	11.3 (2.4)	10 (2.6)	73.6 (2.5)	7.61 J (11.4)	6.88 (2.35)	5.82 (4.41)	6.16 (4.5)	6.72 (2.24)	6.14 (2.28)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-883-07	PB-883-08	PB-883-09	PB-883-10	PB-883-11	PB-883-12	PB-883-13	PB-883-14	PB-883-15
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-883-07-SS01	PB-883-08-SS01	PB-883-09-SS01	PB-883-10-SS01	PB-883-11-SS01	PB-883-12-SS01	PB-883-13-SS01	PB-883-14-SS01	PB-883-15-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	4.0 - 4.5	3.0 - 3.5	3.5 - 4.0	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/14/2022	12/8/2021	12/8/2021	12/8/2021	12/8/2021	12/8/2021	12/8/2021	12/8/2021	7/14/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.00026 J (0.00056)	ND (0.00054)	ND (0.0005)	ND (0.00044)	ND (0.00048)	ND (0.00057)	ND (0.00048)	ND (0.00062)	0.00025 J (0.00048)
Cumene	1000	6.1	87	1000	0.00021 J (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	ND (0.00096)	ND (0.0012)	ND (0.00095)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00056)	ND (0.00054)	ND (0.0005)	ND (0.00044)	ND (0.00048)	ND (0.00057)	ND (0.00048)	ND (0.00062)	ND (0.00048)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	ND (0.00096)	ND (0.0012)	ND (0.00095)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	ND (0.00096)	ND (0.0012)	ND (0.00095)
Methyl tert-butyl ether	2400	16	390	5900	0.0016 J (0.0023)	ND (0.0022)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.0023)	ND (0.0019)	ND (0.0025)	0.0018 J (0.0019)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	ND (0.00096)	ND (0.0012)	ND (0.00095)
1,2,4-Trimethylbenzene	180	0.92	70	250	0.00041 J (0.0023)	ND (0.0022)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.0023)	ND (0.0019)	ND (0.0025)	ND (0.0019)
1,3,5-Trimethylbenzene	220	0.92	99	240	0.00025 J (0.0023)	ND (0.0022)	ND (0.002)	ND (0.0018)	ND (0.0019)	ND (0.0023)	ND (0.0019)	ND (0.0025)	ND (0.0019)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.0011)	ND (0.001)	ND (0.00089)	ND (0.00095)	ND (0.0011)	ND (0.00096)	ND (0.0012)	0.0003 J (0.00095)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.16)	ND (0.14)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.16)	ND (0.14)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.16)
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.2)	ND (0.17)	ND (0.18)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.21)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.2)	ND (0.2)	ND (0.17)	ND (0.18)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.21)	ND (0.2)
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	0.028 J (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.11)	ND (0.12)	0.021 J (0.12)	ND (0.12)	ND (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	13.9 (2.29)	12.8 (2.48)	2.18 (2.03)	4.67 (2.14)	4.25 (2.32)	11 (2.27)	6.72 (2.44)	5.14 (2.35)	8.06 (2.27)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-883-16	PB-883-17	PB-883-18	PB-883-19	PB-883-20	PB-883-21	PB-883-22	PB-883-23	PB-883-24
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-883-16-SS01	PB-883-17-SS01	PB-883-18-SS01	PB-883-19-SS01	PB-883-20-SS01	PB-883-21-SS01	PB-883-22-SS01	PB-883-23-SS01	PB-883-24-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					12/8/2021	12/8/2021	12/8/2021	12/8/2021	7/14/2022	7/14/2022	12/8/2021	12/8/2021	12/8/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00056)	ND (0.00064)	ND (0.032)	ND (0.0005)	0.00045 J (0.00048)	ND (0.00046)	ND (0.00052)	ND (0.00074)	ND (0.00051)
Cumene	1000	6.1	87	1000	0.00019 J (0.0011)	ND (0.0013)	0.82 (0.064)	ND (0.001)	0.00029 J (0.00097)	0.00042 J (0.00091)	0.00024 J (0.001)	ND (0.0015)	ND (0.001)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00056)	ND (0.00064)	ND (0.032)	ND (0.0005)	ND (0.00048)	ND (0.00046)	ND (0.00052)	ND (0.00074)	ND (0.00051)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.0013)	ND (0.064)	ND (0.001)	ND (0.00097)	ND (0.00091)	ND (0.001)	ND (0.0015)	ND (0.001)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.0013)	ND (0.064)	ND (0.001)	ND (0.00097)	0.00034 J (0.00091)	ND (0.001)	ND (0.0015)	ND (0.001)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	ND (0.0026)	ND (0.13)	ND (0.002)	0.0051 (0.0019)	ND (0.0018)	ND (0.0021)	ND (0.003)	ND (0.002)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.0013)	ND (0.064)	ND (0.001)	ND (0.00097)	ND (0.00091)	ND (0.001)	ND (0.0015)	ND (0.001)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	ND (0.0026)	0.04 J (0.13)	ND (0.002)	0.00089 J (0.0019)	0.0097 (0.0018)	ND (0.0021)	ND (0.003)	ND (0.002)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	ND (0.0026)	ND (0.13)	ND (0.002)	0.00048 J (0.0019)	0.0032 (0.0018)	ND (0.0021)	ND (0.003)	ND (0.002)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.0013)	0.044 J (0.064)	ND (0.001)	ND (0.00097)	0.0023 J (0.00091)	ND (0.001)	ND (0.0015)	ND (0.001)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.59)	ND (0.54)	ND (0.54)	ND (0.1)	ND (0.12)	0.74 (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.59)	0.13 J (0.54)	ND (0.54)	ND (0.1)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.79)	ND (0.72)	ND (0.72)	ND (0.14)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.59)	ND (0.54)	ND (0.54)	ND (0.1)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.79)	ND (0.72)	ND (0.72)	ND (0.14)	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.16)
Chrysene	43000	--	320000	--	0.43 J (0.59)	0.36 J (0.54)	0.37 J (0.54)	0.027 J (0.1)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.99)	0.29 J (0.9)	0.25 J (0.91)	ND (0.18)	ND (0.2)	1.2 (0.18)	ND (0.19)	ND (0.2)	ND (0.2)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.99)	ND (0.9)	ND (0.91)	ND (0.18)	ND (0.2)	<u>3 (0.18)</u>	ND (0.19)	ND (0.2)	ND (0.2)
Phenanthrene	4600	--	14000	--	ND (0.59)	0.43 J (0.54)	0.52 J (0.54)	ND (0.1)	ND (0.12)	3.7 (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Pyrene	4600	--	14000	--	0.36 J (0.59)	0.2 J (0.54)	0.19 J (0.54)	ND (0.1)	ND (0.12)	0.23 (0.11)	ND (0.12)	ND (0.12)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	8.62 (2.28)	7.06 (4.2)	6.49 (4.24)	7.75 (4.24)	7.73 (2.28)	12.6 (10.6)	4.03 (2.25)	4.64 (2.26)	4.46 (2.27)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-884-01	PB-884-02	PB-884-03	PB-884-04	PB-884-05	PB-884-06	PB-884-07	PB-884-08	PB-884-09
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-884-01-SS01	PB-884-02-SS01	PB-884-03-SS01	PB-884-04-SS01	PB-884-05-SS01	PB-884-06-SS01	PB-884-07-SS01	PB-884-08-SS01	PB-884-09-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.5 - 4.0	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					12/3/2021	12/3/2021	12/3/2021	12/3/2021	12/6/2021	12/6/2021	12/6/2021	7/14/2022	7/14/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.0003 J (0.00046)	ND (0.00049)	ND (0.00053)	ND (0.00052)	ND (0.0008)	0.0003 J (0.00045)	ND (0.00066)	0.15 (0.033)	<u>2 (0.034)</u>
Cumene	1000	6.1	87	1000	0.00072 J (0.00092)	ND (0.00098)	ND (0.001)	0.078 (0.001)	ND (0.0016)	0.00039 J (0.0009)	ND (0.0013)	0.08 (0.065)	2.8 (0.068)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00046)	ND (0.00049)	ND (0.00053)	ND (0.00052)	ND (0.0008)	ND (0.00045)	ND (0.00066)	ND (0.033)	ND (0.034)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.00092)	ND (0.00098)	ND (0.001)	ND (0.001)	ND (0.0016)	ND (0.0009)	ND (0.0013)	ND (0.065)	ND (0.068)
Ethyl Benzene	2300	15	1300	820	0.00023 J (0.00092)	ND (0.00098)	ND (0.001)	ND (0.001)	ND (0.0016)	0.00052 J (0.0009)	ND (0.0013)	0.14 (0.065)	6.6 (0.068)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0018)	ND (0.002)	ND (0.0021)	0.0003 J (0.0021)	ND (0.0032)	ND (0.0018)	ND (0.0027)	ND (0.13)	ND (0.14)
Toluene	8000	76	650	9800	0.001 (0.00092)	ND (0.00098)	ND (0.001)	ND (0.001)	ND (0.0016)	0.00069 J (0.0009)	ND (0.0013)	0.082 (0.065)	13 (0.068)
1,2,4-Trimethylbenzene	180	0.92	70	250	0.0024 (0.0018)	ND (0.002)	ND (0.0021)	0.015 (0.0021)	ND (0.0032)	0.0064 (0.0018)	ND (0.0027)	<u>2.1 (0.13)</u>	<u>12 (0.14)</u>
1,3,5-Trimethylbenzene	220	0.92	99	240	0.00088 J (0.0018)	ND (0.002)	ND (0.0021)	0.0045 (0.0021)	ND (0.0032)	0.0042 (0.0018)	ND (0.0027)	0.66 (0.13)	<u>3.7 (0.14)</u>
Xylenes (total)	240	1.5	51	340	0.0048 (0.00092)	ND (0.00098)	ND (0.001)	0.00073 J (0.001)	ND (0.0016)	0.0019 J (0.0009)	ND (0.0013)	<u>5.4 (0.065)</u>	<u>41 (0.068)</u>
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	0.053 J (0.12)	ND (0.12)	0.053 J (0.12)	ND (0.12)	ND (0.1)	0.028 J (0.1)	0.03 J (0.1)	0.058 J (0.11)	0.022 J (0.1)
Benzo(a)pyrene	43	--	7.7	--	0.055 J (0.16)	ND (0.16)	ND (0.17)	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	0.055 J (0.15)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	0.077 J (0.12)	ND (0.12)	0.051 J (0.12)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	0.08 J (0.11)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	0.032 J (0.16)	ND (0.16)	ND (0.17)	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	0.041 J (0.15)	ND (0.14)
Chrysene	43000	--	320000	--	0.048 J (0.12)	ND (0.12)	0.048 J (0.12)	ND (0.12)	ND (0.1)	0.027 J (0.1)	0.021 J (0.1)	0.11 (0.11)	0.092 J (0.1)
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.2)	ND (0.21)	0.35 (0.2)	ND (0.17)	ND (0.17)	ND (0.18)	0.25 (0.19)	0.25 (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.2)	ND (0.2)	ND (0.21)	0.073 J (0.2)	ND (0.17)	ND (0.17)	ND (0.18)	<u>0.84 (0.19)</u>	<u>3.2 (0.17)</u>
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.12)	0.033 J (0.12)	0.32 (0.12)	ND (0.1)	0.065 J (0.1)	ND (0.1)	0.45 (0.11)	0.7 (0.1)
Pyrene	4600	--	14000	--	0.031 J (0.12)	ND (0.12)	0.055 J (0.12)	ND (0.12)	ND (0.1)	0.039 J (0.1)	0.043 J (0.1)	0.13 (0.11)	0.056 J (0.1)
Metals													
Lead	2520	--	2520	45000	24.5 (2.28)	5.62 (2.36)	8.8 (2.49)	6.72 (2.43)	2.38 (2.03)	89 (9.96)	2.61 (2.04)	60.2 (4.36)	1.95 J (1.99)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-884-10	PB-884-11	PB-884-12	PB-884-12	PB-884-13	PB-884-14	PB-884-15	PB-884-16	PB-884-17
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-884-10-SS01	PB-884-11-SS01	PB-884-12-SS01	DUP-22	PB-884-13-SS01	PB-884-14-SS01	PB-884-15-SS01	PB-884-16-SS01	PB-884-17-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					12/6/2021	12/3/2021	12/3/2021	12/3/2021	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022
Comments								Field Duplicate					
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00053)	ND (0.00051)	ND (0.00059)	ND (0.00054)	ND (0.00052)	ND (0.00054)	<u>2.6 (0.029)</u>	ND (0.0009)	ND (0.00058)
Cumene	1000	6.1	87	1000	ND (0.0011)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.001)	ND (0.0011)	3.6 (0.059)	ND (0.0018)	ND (0.0012)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00053)	ND (0.00051)	ND (0.00059)	ND (0.00054)	ND (0.00052)	ND (0.00054)	ND (0.029)	ND (0.0009)	ND (0.00058)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.001)	ND (0.0011)	ND (0.059)	ND (0.0018)	ND (0.0012)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.001)	ND (0.0011)	8.8 (0.059)	ND (0.0018)	ND (0.0012)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0021)	ND (0.002)	ND (0.0023)	ND (0.0021)	ND (0.0021)	ND (0.0022)	ND (0.12)	ND (0.0036)	ND (0.0023)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.001)	ND (0.0011)	9 (0.059)	ND (0.0018)	ND (0.0012)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0021)	ND (0.002)	ND (0.0023)	ND (0.0021)	ND (0.0021)	ND (0.0022)	<u>14 (0.12)</u>	ND (0.0036)	ND (0.0023)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0021)	ND (0.002)	ND (0.0023)	ND (0.0021)	ND (0.0021)	ND (0.0022)	<u>4.5 (0.12)</u>	ND (0.0036)	ND (0.0023)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.001)	ND (0.0011)	<u>47 (0.059)</u>	ND (0.0018)	ND (0.0012)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.1)	0.089 J (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.14)	0.074 J (0.16)	ND (0.16)	ND (0.16)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.1)	0.095 J (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.14)	0.038 J (0.16)	ND (0.16)	ND (0.16)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.1)	0.087 J (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.1)	0.059 J (0.1)	ND (0.1)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.17)	ND (0.21)	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.17)	0.13 J (0.17)	ND (0.17)	ND (0.18)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.17)	0.068 J (0.21)	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.17)	<u>0.85 (0.17)</u>	ND (0.17)	ND (0.18)
Phenanthrene	4600	--	14000	--	ND (0.1)	0.065 J (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.1)	0.45 (0.1)	ND (0.1)	ND (0.1)
Pyrene	4600	--	14000	--	ND (0.1)	0.091 J (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.1)	0.036 J (0.1)	ND (0.1)	ND (0.1)
Metals													
Lead	2520	--	2520	45000	2.58 (1.99)	37 (2.43)	5.65 (2.4)	54.3 (2.37)	3.2 (2.13)	2.63 (1.99)	1.68 J (2.02)	1.86 J (2)	1.99 J (2.01)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-884-18	PB-884-19	PB-884-20	PB-884-21	PB-884-22	PB-884-23	PB-884-24	PB-884-25	PB-884-26
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-884-18-SS01	PB-884-19-SS01	PB-884-20-SS01	PB-884-21-SS01	PB-884-22-SS01	PB-884-23-SS01	PB-884-24-SS01	PB-884-25-SS01	PB-884-26-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/14/2022	7/14/2022	7/14/2022	7/14/2022	12/6/2021	7/14/2022	7/15/2022	7/15/2022	12/6/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	0.035 (0.00055)	0.00036 J (0.00057)	ND (0.00055)	ND (0.00047)	ND (0.00066)	ND (0.0005)	0.034 (0.00063)	<u>7.1 (0.027)</u>	ND (0.0006)
Cumene	1000	6.1	87	1000	0.0053 (0.0011)	0.0044 (0.0011)	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	0.03 (0.0013)	3 (0.054)	ND (0.0012)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00055)	ND (0.00057)	ND (0.00055)	ND (0.00047)	ND (0.00066)	ND (0.0005)	ND (0.00063)	ND (0.027)	ND (0.0006)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.0011)	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	ND (0.0013)	ND (0.054)	ND (0.0012)
Ethyl Benzene	2300	15	1300	820	0.024 (0.0011)	0.0024 (0.0011)	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	0.095 (0.0013)	9.4 (0.054)	ND (0.0012)
Methyl tert-butyl ether	2400	16	390	5900	0.00054 J (0.0022)	ND (0.0023)	ND (0.0022)	ND (0.0019)	ND (0.0026)	ND (0.002)	ND (0.0025)	ND (0.11)	ND (0.0024)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.0011)	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	ND (0.0013)	15 (0.11)	ND (0.0012)
1,2,4-Trimethylbenzene	180	0.92	70	250	0.033 (0.0022)	0.052 (0.0023)	ND (0.0022)	ND (0.0019)	ND (0.0026)	ND (0.002)	0.13 (0.0025)	<u>12 (0.11)</u>	ND (0.0024)
1,3,5-Trimethylbenzene	220	0.92	99	240	0.01 (0.0022)	0.022 (0.0023)	ND (0.0022)	ND (0.0019)	ND (0.0026)	ND (0.002)	0.042 (0.0025)	<u>3.8 (0.11)</u>	ND (0.0024)
Xylenes (total)	240	1.5	51	340	0.028 (0.0011)	0.05 (0.0011)	ND (0.0011)	ND (0.00094)	ND (0.0013)	ND (0.001)	0.36 (0.0013)	<u>41 (0.054)</u>	ND (0.0012)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.12)	0.035 J (0.11)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.048 J (0.12)	0.022 J (0.11)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.14)	ND (0.16)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.046 J (0.12)	ND (0.11)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.14)	ND (0.16)
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.04 J (0.12)	0.084 J (0.11)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.17)	ND (0.2)	0.31 (0.18)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	0.05 J (0.2)	0.085 J (0.17)	ND (0.17)	ND (0.17)	ND (0.18)	ND (0.17)	0.082 J (0.2)	<u>2.1 (0.18)</u>	ND (0.19)
Phenanthrene	4600	--	14000	--	ND (0.12)	0.04 J (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.042 J (0.12)	0.53 (0.11)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.1)	0.051 J (0.12)	0.048 J (0.11)	0.025 J (0.12)
Metals													
Lead	2520	--	2520	45000	7.17 (4.64)	1.61 J (2.08)	1.04 J (2.06)	1.98 J (2.05)	2.77 (2.16)	1.61 J (2.08)	45.9 (11.7)	3.11 (2.13)	26.5 (2.31)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-884-27	PB-884-28	PB-884-29	PB-885-01	PB-885-02	PB-885-03	PB-885-04	PB-885-05	PB-885-06
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-884-27-SS01	PB-884-28-SS01	PB-884-29-SS01	PB-885-01-SS01	PB-885-02-SS01	PB-885-03-SS01	PB-885-04-SS01	PB-885-05-SS01	PB-885-06-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					12/3/2021	12/3/2021	12/3/2021	12/6/2021	12/6/2021	12/6/2021	7/14/2022	7/14/2022	12/7/2021
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00025)	ND (0.00048)	ND (0.00045)	ND (0.00051)	ND (0.0005)	ND (0.00054)	ND (0.00046)	ND (0.00047)	ND (0.00056)
Cumene	1000	6.1	87	1000	ND (0.0005)	ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00025)	ND (0.00048)	ND (0.00045)	ND (0.00051)	ND (0.0005)	ND (0.00054)	ND (0.00046)	ND (0.00047)	ND (0.00056)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0005)	ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
Ethyl Benzene	2300	15	1300	820	ND (0.0005)	ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.001)	ND (0.0019)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0022)	ND (0.0018)	ND (0.0019)	ND (0.0022)
Toluene	8000	76	650	9800	ND (0.0005)	ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.001)	ND (0.0019)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0022)	ND (0.0018)	ND (0.0019)	ND (0.0022)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.001)	ND (0.0019)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0022)	ND (0.0018)	ND (0.0019)	ND (0.0022)
Xylenes (total)	240	1.5	51	340	ND (0.0005)	ND (0.00096)	ND (0.0009)	ND (0.001)	ND (0.00099)	ND (0.0011)	ND (0.00091)	ND (0.00095)	ND (0.0011)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	0.042 J (0.12)	ND (0.12)	ND (0.11)	0.031 J (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.15)	0.054 J (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	0.039 J (0.12)	ND (0.12)	ND (0.11)	0.075 J (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.15)	0.048 J (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.12)	0.038 J (0.12)	ND (0.12)	ND (0.11)	0.036 J (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.2)	ND (0.21)	ND (0.19)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.2)	ND (0.2)	ND (0.21)	ND (0.19)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.18)
Phenanthrene	4600	--	14000	--	ND (0.12)	0.045 J (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Pyrene	4600	--	14000	--	ND (0.12)	0.06 J (0.12)	ND (0.12)	ND (0.11)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)
Metals													
Lead	2520	--	2520	45000	11.5 (2.41)	9.37 (2.39)	4.49 (2.47)	150 (11.1)	43.9 (11.3)	2.68 (2.05)	1.56 J (2)	1.39 J (1.97)	2.41 (2.07)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-885-07	PB-885-08	PB-885-09	PB-885-10	PB-885-11	PB-885-12	PB-885-13	PB-885-14	PB-885-15
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-885-07-SS01	PB-885-08-SS01	PB-885-09-SS01	PB-885-10-SS01	PB-885-11-SS01	PB-885-12-SS01	PB-885-13-SS01	PB-885-14-SS01	PB-885-15-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					12/6/2021	12/6/2021	12/6/2021	12/6/2021	12/6/2021	7/14/2022	7/14/2022	7/14/2022	7/14/2022
Comments													
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00056)	ND (0.00042)	ND (0.0005)	ND (0.00058)	ND (0.00053)	ND (0.00043)	ND (0.00048)	ND (0.00042)	ND (0.00045)
Cumene	1000	6.1	87	1000	ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)	ND (0.0009)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00056)	ND (0.00042)	ND (0.0005)	ND (0.00058)	ND (0.00053)	ND (0.00043)	ND (0.00048)	ND (0.00042)	ND (0.00045)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)	ND (0.0009)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)	ND (0.0009)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	ND (0.0017)	ND (0.002)	ND (0.0023)	ND (0.0021)	ND (0.0017)	ND (0.0019)	ND (0.0017)	ND (0.0018)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)	ND (0.0009)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	ND (0.0017)	ND (0.002)	ND (0.0023)	ND (0.0021)	ND (0.0017)	ND (0.0019)	ND (0.0017)	ND (0.0018)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	ND (0.0017)	ND (0.002)	ND (0.0023)	ND (0.0021)	ND (0.0017)	ND (0.0019)	ND (0.0017)	ND (0.0018)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.00083)	ND (0.001)	ND (0.0012)	ND (0.0011)	ND (0.00087)	ND (0.00095)	ND (0.00084)	ND (0.0009)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.28)	ND (0.16)	ND (0.14)	ND (0.17)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.28)	ND (0.16)	ND (0.14)	ND (0.17)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.18)	ND (0.35)	ND (0.2)	ND (0.18)	ND (0.21)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.18)	ND (0.35)	ND (0.2)	ND (0.18)	ND (0.21)	ND (0.17)	ND (0.17)	ND (0.17)	ND (0.17)
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.21)	ND (0.12)	ND (0.1)	ND (0.12)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Metals													
Lead	2520	--	2520	45000	17.4 (2.15)	9.07 (2.01)	7.61 (2.39)	3.04 (2.03)	6.43 (2.5)	1.33 J (1.97)	1.72 J (1.99)	1.45 J (1.95)	1.48 J (1.98)

Notes:

- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
- 3 Underlined concentrations exceed the Routine Worker Soil VI.
- 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
- 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-885-16	PB-885-17	PB-885-17	PB-885-18	PB-885-19	PB-885-20	PB-885-21	PB-885-22	PB-885-23
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-885-16-SS01	PB-885-17-SS01	DUP-45	PB-885-18-SS01	PB-885-19-SS01	PB-885-20-SS01	PB-885-21-SS01	PB-885-22-SS01	PB-885-23-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					12/6/2021	7/15/2022	7/15/2022	7/15/2022	7/15/2022	7/14/2022	12/7/2021	12/7/2021	12/7/2021
Comments							Field Duplicate						
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00056)	ND (0.00041)	ND (0.00046)	ND (0.00045)	ND (0.00044)	ND (0.00049)	ND (0.00056)	ND (0.0005)	ND (0.00058)
Cumene	1000	6.1	87	1000	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)	ND (0.001)	ND (0.0012)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00056)	ND (0.00041)	ND (0.00046)	ND (0.00045)	ND (0.00044)	ND (0.00049)	ND (0.00056)	ND (0.0005)	ND (0.00058)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)	ND (0.001)	ND (0.0012)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)	ND (0.001)	ND (0.0012)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0022)	ND (0.0016)	ND (0.0018)	ND (0.0018)	ND (0.0017)	ND (0.002)	ND (0.0022)	ND (0.002)	ND (0.0023)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)	ND (0.001)	ND (0.0012)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0022)	ND (0.0016)	ND (0.0018)	ND (0.0018)	ND (0.0017)	ND (0.002)	ND (0.0022)	ND (0.002)	ND (0.0023)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0022)	ND (0.0016)	ND (0.0018)	ND (0.0018)	ND (0.0017)	ND (0.002)	ND (0.0022)	ND (0.002)	ND (0.0023)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.00082)	ND (0.00093)	ND (0.0009)	ND (0.00087)	ND (0.00099)	ND (0.0011)	ND (0.001)	ND (0.0012)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.16)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.16)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.2)	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.2)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.2)	ND (0.19)	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.2)	ND (0.17)
Phenanthrene	4600	--	14000	--	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Pyrene	4600	--	14000	--	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.1)
Metals													
Lead	2520	--	2520	45000	8.76 J (11.4)	1.53 J (2.21)	2.24 (2.16)	1.49 J (2.06)	1.93 J (2.13)	1.63 J (1.97)	3.11 (2.06)	4.76 (4.73)	2.8 (2.08)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-885-23	PB-885-24	PB-885-25	PB-885-26	PB-886-01	PB-886-02	PB-886-03	PB-886-04	PB-886-05
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	DUP-23	PB-885-24-SS01	PB-885-25-SS01	PB-885-26-SS01	PB-886-01-SS01	PB-886-02-SS01	PB-886-03-SS01	PB-886-04-SS01	PB-886-05-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					12/7/2021	7/15/2022	7/14/2022	12/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021	10/7/2021
Comments					Field Duplicate								
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.034)	ND (0.00058)	ND (0.00042)	ND (0.0006)	ND (0.00048)	ND (0.00046)	ND (0.00051)	ND (0.0005)	ND (0.00042)
Cumene	1000	6.1	87	1000	2 (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)	ND (0.001)	0.00018 J (0.001)	ND (0.00084)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.034)	ND (0.00058)	ND (0.00042)	ND (0.0006)	ND (0.00048)	ND (0.00046)	ND (0.00051)	ND (0.0005)	ND (0.00042)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)	ND (0.001)	ND (0.001)	ND (0.00084)
Ethyl Benzene	2300	15	1300	820	0.016 J (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)	ND (0.001)	0.00014 J (0.001)	ND (0.00084)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.13)	ND (0.0023)	ND (0.0017)	ND (0.0024)	ND (0.0019)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0017)
Toluene	8000	76	650	9800	ND (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)	ND (0.001)	ND (0.001)	ND (0.00084)
1,2,4-Trimethylbenzene	180	0.92	70	250	0.054 J (0.13)	ND (0.0023)	ND (0.0017)	ND (0.0024)	ND (0.0019)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0017)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.13)	ND (0.0023)	ND (0.0017)	ND (0.0024)	ND (0.0019)	ND (0.0018)	ND (0.002)	ND (0.002)	ND (0.0017)
Xylenes (total)	240	1.5	51	340	0.036 J (0.067)	ND (0.0012)	ND (0.00085)	ND (0.0012)	ND (0.00097)	ND (0.00091)	ND (0.001)	ND (0.001)	ND (0.00084)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	3.7 (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (3.2)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (3.2)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.15)	ND (0.16)	ND (0.16)	ND (0.16)	ND (0.14)
Chrysene	43000	--	320000	--	ND (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)
Fluorene	6200	--	18000	--	14 (4)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.18)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (4)	ND (0.19)	ND (0.17)	ND (0.17)	ND (0.19)	ND (0.2)	ND (0.2)	ND (0.19)	ND (0.18)
Phenanthrene	4600	--	14000	--	29 (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.12)	0.043 J (0.12)	ND (0.1)
Pyrene	4600	--	14000	--	2.9 (2.4)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.12)	ND (0.1)
Metals													
Lead	2520	--	2520	45000	6.69 (2.29)	1.63 J (2.16)	1.5 J (1.97)	2.28 (2.05)	6.35 (4.55)	5.8 (4.64)	6.5 (4.81)	8.09 (4.65)	2.94 J (4.12)

- Notes:**
- All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - Underlined concentrations exceed the Routine Worker Soil VI.
 - Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-886-06	PB-886-07	PB-886-08	PB-886-09	PB-886-09	PB-886-10	PB-886-11	PB-886-12	PB-886-13
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-886-06-SS01	PB-886-07-SS01	PB-886-08-SS01	PB-886-09-SS01	DUP-21	PB-886-10-SS01	PB-886-11-SS01	PB-886-12-SS01	PB-886-13-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	4.5 - 5.0	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.5 - 4.0	4.0 - 4.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/15/2022	7/15/2022	10/7/2021	10/7/2021	10/7/2021	7/15/2022	10/7/2021	10/7/2021	7/15/2022
Comments									Field Duplicate				
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00054)	ND (0.0012)	ND (0.038)	ND (0.00045)	ND (0.00063)	ND (0.0006)	ND (0.00059)	ND (0.00072)	ND (0.0011)
Cumene	1000	6.1	87	1000	ND (0.0011)	ND (0.0024)	0.015 J (0.075)	ND (0.0009)	0.00098 J (0.0013)	ND (0.0012)	ND (0.0012)	ND (0.0014)	ND (0.0021)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00054)	ND (0.0012)	ND (0.038)	ND (0.00045)	ND (0.00063)	ND (0.0006)	ND (0.00059)	ND (0.00072)	ND (0.0011)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0011)	ND (0.0024)	ND (0.075)	ND (0.0009)	ND (0.0013)	ND (0.0012)	ND (0.0012)	ND (0.0014)	ND (0.0021)
Ethyl Benzene	2300	15	1300	820	ND (0.0011)	ND (0.0024)	ND (0.075)	ND (0.0009)	0.00033 J (0.0013)	ND (0.0012)	ND (0.0012)	ND (0.0014)	ND (0.0021)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0021)	ND (0.0047)	ND (0.15)	ND (0.0018)	ND (0.0025)	ND (0.0024)	ND (0.0024)	ND (0.0029)	ND (0.0043)
Toluene	8000	76	650	9800	ND (0.0011)	ND (0.0024)	ND (0.075)	ND (0.0009)	ND (0.0013)	ND (0.0012)	ND (0.0012)	ND (0.0014)	ND (0.0021)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0021)	ND (0.0047)	ND (0.15)	ND (0.0018)	0.025 (0.0025)	0.00084 J (0.0024)	ND (0.0024)	0.0011 J (0.0029)	ND (0.0043)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0021)	ND (0.0047)	ND (0.15)	ND (0.0018)	0.024 (0.0025)	0.0014 J (0.0024)	ND (0.0024)	0.0014 J (0.0029)	ND (0.0043)
Xylenes (total)	240	1.5	51	340	ND (0.0011)	ND (0.0024)	ND (0.075)	ND (0.0009)	0.0021 J (0.0013)	0.00053 J (0.0012)	ND (0.0012)	0.00049 J (0.0014)	ND (0.0021)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.11)	0.32 (0.1)	ND (0.1)	ND (0.1)	0.16 (0.11)	ND (0.11)	ND (0.12)	ND (0.11)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.15)	ND (0.15)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.14)	ND (0.15)	ND (0.15)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.11)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)
Fluorene	6200	--	18000	--	ND (0.19)	ND (0.19)	0.88 (0.18)	ND (0.18)	ND (0.18)	0.35 (0.18)	ND (0.18)	0.044 J (0.19)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.19)	ND (0.19)	0.062 J (0.18)	ND (0.18)	ND (0.18)	0.041 J (0.18)	ND (0.18)	ND (0.19)	ND (0.19)
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.11)	1.7 (0.1)	ND (0.1)	ND (0.1)	0.78 (0.11)	ND (0.11)	0.12 (0.12)	ND (0.11)
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.11)	0.1 (0.1)	ND (0.1)	ND (0.1)	0.049 J (0.11)	ND (0.11)	ND (0.12)	ND (0.11)
Metals													
Lead	2520	--	2520	45000	2.26 (2.2)	2.62 (2.23)	81.9 (2.1)	1.76 J (2.1)	1.87 J (2.09)	1.97 J (2.11)	11.7 (2.14)	5.66 (4.58)	3.04 (2.26)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
ND - Not Detected
NA - Not Analyzed
J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-886-14	PB-886-14	PB-886-15	PB-886-16	PB-886-17	PB-886-18	PB-886-19	PB-886-20	PB-886-21
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-886-14-SS01	DUP-46	PB-886-15-SS01	PB-886-16-SS01	PB-886-17-SS01	PB-886-18-SS01	PB-886-19-SS01	PB-886-20-SS01	PB-886-21-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/15/2022	7/15/2022	7/15/2022	7/15/2022	7/15/2022	10/7/2021	7/15/2022	7/15/2022	7/15/2022
Comments						Field Duplicate							
Volatile Organic Compounds													
Benzene	63	0.46	8.7	98	ND (0.00061)	ND (0.00083)	ND (0.00087)	ND (0.00043)	ND (0.00052)	ND (0.00057)	ND (0.00066)	ND (0.00063)	ND (0.00044)
Cumene	1000	6.1	87	1000	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	0.00012 J (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.00061)	ND (0.00083)	ND (0.00087)	ND (0.00043)	ND (0.00052)	ND (0.00057)	ND (0.00066)	ND (0.00063)	ND (0.00044)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	ND (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)
Ethyl Benzene	2300	15	1300	820	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	ND (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.0024)	ND (0.0033)	ND (0.0035)	ND (0.0017)	ND (0.0021)	ND (0.0023)	ND (0.0026)	ND (0.0025)	ND (0.0018)
Toluene	8000	76	650	9800	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	ND (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.0024)	ND (0.0033)	ND (0.0035)	ND (0.0017)	0.0025 (0.0021)	ND (0.0023)	ND (0.0026)	ND (0.0025)	ND (0.0018)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.0024)	ND (0.0033)	ND (0.0035)	ND (0.0017)	0.00082 J (0.0021)	ND (0.0023)	ND (0.0026)	ND (0.0025)	ND (0.0018)
Xylenes (total)	240	1.5	51	340	ND (0.0012)	ND (0.0017)	ND (0.0017)	ND (0.00087)	ND (0.001)	ND (0.0011)	ND (0.0013)	ND (0.0012)	ND (0.00089)
Semivolatile Organic Compounds													
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	0.022 J (0.11)	ND (0.11)	ND (0.11)	ND (0.12)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.15)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	0.036 J (0.11)	ND (0.11)	ND (0.11)	ND (0.12)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.15)	ND (0.15)	ND (0.14)	ND (0.15)	0.027 J (0.15)	ND (0.15)	ND (0.15)	ND (0.15)
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	0.093 J (0.11)	ND (0.11)	ND (0.11)	ND (0.12)
Fluorene	6200	--	18000	--	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.18)	0.046 J (0.19)	0.03 J (0.18)	ND (0.19)	ND (0.18)	ND (0.19)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.18)	ND (0.18)	ND (0.19)	ND (0.18)	0.092 J (0.19)	0.14 J (0.18)	ND (0.19)	ND (0.18)	ND (0.19)
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	0.13 (0.12)	0.12 (0.11)	ND (0.11)	ND (0.11)	ND (0.12)
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.11)	ND (0.12)	0.11 (0.11)	ND (0.11)	ND (0.11)	ND (0.12)
Metals													
Lead	2520	--	2520	45000	2.16 J (2.18)	2.04 J (2.14)	2.56 (2.2)	1.82 J (2.13)	1.8 J (2.27)	1.92 J (2.1)	2.28 (2.24)	2.19 J (2.22)	1.82 J (2.23)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I1
Summary of PESRM Soil Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location					PB-886-22	PB-886-23	PB-886-24	PB-886-25	PB-886-26	PB-886-27
Field Sample ID	Routine Worker	Routine Worker	Construction	Soil Migration to	PB-886-22-SS01	PB-886-23-SS01	PB-886-24-SS01	PB-886-25-SS01	PB-886-26-SS01	PB-886-27-SS01
Collection Depth (ft bgs)	Soil Direct	Soil VI	Worker Soil Direct	GW	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5	3.0 - 3.5
Sample Method	Contact		Contact		Grab	Grab	Grab	Grab	Grab	Grab
Sample Date					7/15/2022	7/15/2022	10/7/2021	7/15/2022	10/7/2021	10/7/2021
Comments										
Volatile Organic Compounds										
Benzene	63	0.46	8.7	98	ND (0.0005)	ND (0.0005)	ND (0.00053)	ND (0.00045)	0.00025 J (0.00057)	ND (0.00047)
Cumene	1000	6.1	87	1000	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.0009)	0.0089 (0.0011)	0.00021 J (0.00095)
1,2-Dibromoethane	1.2	0.0071	1.8	3.2	ND (0.0005)	ND (0.0005)	ND (0.00053)	ND (0.00045)	ND (0.00057)	ND (0.00047)
1,2-Dichloroethane	16	0.11	8.1	33	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.0009)	ND (0.0011)	ND (0.00095)
Ethyl Benzene	2300	15	1300	820	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.0009)	0.0032 (0.0011)	0.00018 J (0.00095)
Methyl tert-butyl ether	2400	16	390	5900	ND (0.002)	ND (0.002)	ND (0.0021)	ND (0.0018)	ND (0.0023)	ND (0.0019)
Toluene	8000	76	650	9800	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.0009)	0.0012 (0.0011)	ND (0.00095)
1,2,4-Trimethylbenzene	180	0.92	70	250	ND (0.002)	ND (0.002)	ND (0.0021)	ND (0.0018)	0.17 (0.0023)	0.051 (0.0019)
1,3,5-Trimethylbenzene	220	0.92	99	240	ND (0.002)	ND (0.002)	ND (0.0021)	ND (0.0018)	0.14 (0.0023)	ND (0.12)
Xylenes (total)	240	1.5	51	340	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.0009)	0.025 (0.0011)	0.0011 J (0.00095)
Semivolatile Organic Compounds										
Anthracene	46000	--	46000	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	0.034 J (0.11)	ND (0.1)
Benzo(a)anthracene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)
Benzo(a)pyrene	43	--	7.7	--	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.15)	ND (0.14)	ND (0.14)
Benzo(b)fluoranthene	430	--	3200	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	ND (0.11)	ND (0.1)
Benzo(g,h,i)perylene	4600	--	14000	--	ND (0.15)	ND (0.15)	ND (0.16)	ND (0.15)	ND (0.14)	ND (0.14)
Chrysene	43000	--	320000	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	0.031 J (0.11)	ND (0.1)
Fluorene	6200	--	18000	--	ND (0.19)	ND (0.18)	ND (0.2)	ND (0.18)	0.054 J (0.18)	ND (0.17)
Indeno(1,2,3-cd)pyrene	430	--	3200	--	NA	NA	NA	NA	NA	NA
Naphthalene	41	0.54	6	27	ND (0.19)	ND (0.18)	ND (0.2)	ND (0.18)	0.022 J (0.18)	ND (0.17)
Phenanthrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	0.12 (0.11)	ND (0.1)
Pyrene	4600	--	14000	--	ND (0.11)	ND (0.11)	ND (0.12)	ND (0.11)	0.045 J (0.11)	ND (0.1)
Metals										
Lead	2520	--	2520	45000	2.06 J (2.24)	1.95 J (2.21)	4.51 (2.35)	1.81 J (2.18)	2.15 (2.08)	2.28 (2.04)

- Notes:**
- 1 All concentrations reported in mg/kg (ppm); detection limits in parentheses.
 - 2 Boldfaced concentrations exceed the Routine Worker Soil Direct Contact.
 - 3 Underlined concentrations exceed the Routine Worker Soil VI.
 - 4 Italicized concentrations exceed the Construction Worker Soil Direct Contact.
 - 5 No concentrations exceed the Soil Migration to GW.

Abbreviations:
 ND - Not Detected
 NA - Not Analyzed
 J - Estimated Concentration

Table I2
Summary of Soil QAQC Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC
Field Sample ID	TB-211203	FB-211203	FB-211206	TB-211207	FB-211207	TB-211208	FB-211208-1	FB-211208-2	TB-211209	FB-211209	TB-070822	FB-070822-1	FB-070822-2
Sample Date	12/3/2021	12/3/2021	12/6/2021	12/7/2021	12/7/2021	12/8/2021	12/8/2021	12/8/2021	12/9/2021	12/9/2021	7/8/2022	7/8/2022	7/8/2022
Comments	Trip Blank	Field Blank	Field Blank	Trip Blank	Field Blank	Trip Blank	Field Blank	Field Blank	Trip Blank	Field Blank	Trip Blank	Field Blank	Field Blank
Volatile Organic Compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semivolatile Organic Compounds													
Anthracene	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	0.01 J (0.1)
Benzo(a)anthracene	NA	ND (0.05)	ND (0.05)	NA	0.02 J (0.05)	NA	ND (0.05)	ND (0.05)	NA	ND (0.05)	NA	ND (0.05)	ND (0.05)
Benzo(a)pyrene	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	ND (0.1)
Benzo(b)fluoranthene	NA	ND (0.05)	ND (0.05)	NA	ND (0.05)	NA	ND (0.05)	ND (0.05)	NA	ND (0.05)	NA	ND (0.05)	ND (0.05)
Benzo(g,h,i)perylene	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	ND (0.1)
Chrysene	NA	0.01 J (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	ND (0.1)
Fluorene	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	0.02 J (0.1)
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND (0.1)	NA	NA	NA
Naphthalene	NA	ND (0.1)	ND (0.1)	NA	ND (0.1)	NA	0.09 J (0.1)	ND (0.1)	NA	ND (0.1)	NA	ND (0.1)	ND (0.1)
Phenanthrene	NA	ND (0.05)	ND (0.05)	NA	ND (0.05)	NA	ND (0.05)	ND (0.05)	NA	ND (0.05)	NA	ND (0.05)	0.04 J (0.05)
Metals	NA	ND	ND	NA	ND	NAN	ND	ND	NA	ND	NA	ND	ND

Notes:

- 1 All concentrations reported in ug/L (ppb); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table I2
Summary of Soil QAQC Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC
Field Sample ID	FB-070822-3	FB-070822-4	TB-071122	FB-071122-1	FB-071122-2	FB-071122-3	FB-071122-4	TB-220712	FB-071222-1	FB-071222-2	FB-220712-3	TB-071322	FB-071322-1
Sample Date	7/8/2022	7/8/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/11/2022	7/12/2022	7/12/2022	7/12/2022	7/12/2022	7/13/2022	7/13/2022
Comments	Field Blank	Field Blank	Trip Blank	Field Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Field Blank
Volatile Organic Compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semivolatile Organic Compounds													
Anthracene	ND (0.1)	ND (0.1)	NA	0.02 J (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)
Benzo(a)anthracene	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)
Benzo(a)pyrene	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)
Benzo(b)fluoranthene	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)
Benzo(g,h,i)perylene	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)
Chrysene	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)
Fluorene	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ND (0.1)	ND (0.1)	NA	ND (0.1)	0.05 J (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA	0.05 J (0.1)
Phenanthrene	ND (0.05)	ND (0.05)	NA	0.04 J (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)
Metals	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND

Notes:

- 1 All concentrations reported in ug/L (ppb); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table I2
Summary of Soil QAQC Analytical Results
Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC	QAQC
Field Sample ID	FB-071322-2	TB-071422	FB-071422-1	FB-071422-2	FB-071422-3	FB-071422-4	TB-071522	FB-07152022-2	FB-07152022-3	FB-071522-1	TB-221220-1
Sample Date	7/13/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/14/2022	7/15/2022	7/15/2022	7/15/2022	7/15/2022	12/19/2022
Comments	Field Blank	Trip Blank	Field Blank	Field Blank	Field Blank	Field Blank	Trip Blank	Field Blank	Field Blank	Field Blank	Trip Blank
Volatile Organic Compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Semivolatile Organic Compounds											
Anthracene	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA
Benzo(a)anthracene	ND (0.05)	NA	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	NA	0.02 J (0.05)	0.03 J (0.05)	ND (0.05)	NA
Benzo(a)pyrene	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	0.02 J (0.1)	ND (0.1)	NA
Benzo(b)fluoranthene	ND (0.05)	NA	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	NA	ND (0.05)	0.04 J (0.05)	ND (0.05)	NA
Benzo(g,h,i)perylene	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	0.03 J (0.1)	ND (0.1)	NA
Chrysene	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	0.01 J (0.1)	0.02 J (0.1)	ND (0.1)	NA
Fluorene	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	NA
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	ND (0.1)	0.03 J (0.1)	NA	NA
Naphthalene	ND (0.1)	NA	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	0.09 J (0.1)	ND (0.1)	ND (0.1)	NA
Phenanthrene	0.03 J (0.05)	NA	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	NA	0.04 J (0.05)	ND (0.05)	ND (0.05)	NA

Metals

Notes:

- 1 All concentrations reported in ug/L (ppb); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.

Abbreviations:

- ND - Not Detected
- NA - Not Analyzed
- J - Estimated Concentration

Table I3
Summary of Groundwater Analytical Results
Tank Group 04

Philadelphia Energy Solutions Marketing and Refining, LLC, Philadelphia, PA

Location Field Sample ID Sample Method Sample Date Comments	Nonpotable GW Use	Routine Worker GW Vol to Outdoor Air	Routine Worker GW VI	Construction Worker GW Direct Contact	Off-Site Resident GW VI	GW Migration to SW	TG04-MW-01 TG04-MW-01-230106 Grab 1/6/2023	TG04-MW-03 TG04-MW-03-230104 Grab 1/4/2023	TG04-MW-03 TG04-MW-03-230104D Grab 1/4/2023 Field Duplicate	S-219 S-219-230106 Grab 1/6/2023
Volatile Organic Compounds										
Benzene	300	550000	3800	4000	250	130000	580 (2.5)	ND (0.5)	ND (0.5)	ND (0.5)
Cumene	37000	9100000	63000	30000	4000	2600	75 (2.5)	ND (0.5)	ND (0.5)	0.28 J (0.5)
1,2-Dibromoethane	17	16000	110	910	160	--	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
1,2-Dichloroethane	330	170000	1200	4900	82	3100000	ND (2.5)	ND (0.5)	ND (0.5)	ND (0.5)
Ethyl Benzene	2000	22000000	150000	40000	9700	13000	110 (2.5)	ND (0.5)	ND (0.5)	ND (0.5)
Methyl tert-butyl ether	21000	29000000	210000	190000	42000	11000000	ND (5)	ND (1)	ND (1)	ND (1)
Toluene	25000	100000000	700000	200000	45000	52000	11 (3.8)	ND (0.75)	ND (0.75)	ND (0.75)
1,2,4-Trimethylbenzene	8700	1400000	9700	15000	630	33000	54 (12)	ND (2.5)	ND (2.5)	ND (2.5)
1,3,5-Trimethylbenzene	8800	1300000	9100	15000	590	71000	13 (12)	ND (2.5)	ND (2.5)	ND (2.5)
Xylenes (total)	3700	1900000	13000	17000	860	210000	190 (5)	ND (1)	ND (1)	ND (1)
Semivolatile Organic Compounds										
Anthracene	240000	--	--	19000000	--	40000	0.11 (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(a)anthracene	100	--	--	1400000	--	13	0.1 (0.05)	ND (0.05)	0.03 J (0.05)	0.18 (0.05)
Benzo(a)pyrene	10	--	--	5800	--	1.3	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Benzo(b)fluoranthene	160	--	--	1400000	--	13	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Benzo(g,h,i)perylene	44000	--	--	5800000	--	12	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Chrysene	16000	--	--	140000000	--	1300	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Fluorene	97000	--	--	7800000	--	7000	0.92 (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Indeno(1,2,3-cd)pyrene	100	--	--	1400000	--	13	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Naphthalene	390	120000	880	280	67	43000	9.4 (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Phenanthrene	73000	--	--	5800000	--	1000	0.25 (0.05)	ND (0.05)	ND (0.05)	ND (0.05)
Pyrene	50000	--	--	5800000	--	3000	0.06 J (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Metals										
Lead	--	--	--	--	--	2500	ND (1)	ND (1)	ND (1)	ND (1)

Notes:

- 1 All concentrations reported in ug/L (ppb); detection limits in parentheses.
- 2 Boldfaced concentrations exceed the Nonpotable GW Use.
- 3 No concentrations exceed the Routine Worker GW Vol to Outdoor Air.
- 4 No concentrations exceed the Routine Worker GW VI.
- 5 No concentrations exceed the Construction Worker GW Direct Contact.
- 6 Underlined concentrations exceed the Off-Site Resident GW VI.
- 7 No concentrations exceed the GW Migration to SW.

Abbreviations:

- ND - Not Detected
- J - Estimated Concentration

Table I4

Summary of Groundwater QAQC Analytical Results

Tank Group 04

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Location	QAQC
Field Sample ID	TB-230106-2
Sample Date	1/6/2023
Comments	Trip Blank
Volatile Organic Compounds	ND

Notes:

- 1 All concentrations reported in ug/L (ppb); detection limits in parentheses.
- 2 Only compounds with at least one detection are shown.

Abbreviations:

ND - Not Detected

Table 15

Quality Control Methodology

Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Multiple VOC Runs Data Quality	Solution
If the surrogate recoveries for one run are within acceptance criteria and the other run has 3-4 surrogates outside of acceptance criteria :	The run with surrogate recoveries within acceptance criteria is selected as reportable.
If the surrogate recoveries for one run are within acceptance criteria and has some detections and the other run has 1-2 surrogates outside of acceptance criteria :	The run with surrogate recoveries within acceptance criteria is selected as reportable.
If one run has surrogate recoveries within acceptance criteria but is non-detect and the other run has 1-2 surrogates outside of acceptance criteria but has detections :	The run with detections is selected as reportable and the run with non-detects is not reported.
If both runs have detections and surrogate recoveries outside of acceptance criteria :	The run with more surrogates recoveries outside acceptance criteria is not reported and the run with fewer surrogate recoveries outside of acceptance criteria is selected as reportable.
If one run has surrogate recoveries outside of acceptance criteria but is non-detect and the other run has 1-2 more surrogates outside of acceptance criteria but has detections :	The run with detections is selected as reportable and the run with non-detects is not reported.
If both runs have the same number of surrogates with recovery outside the acceptance criteria:	If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable .
If two VOC runs are reported and there are no QC issues for both runs:	If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable .

Table I6
Quality Control Checklist
Former Philadelphia Refinery, Philadelphia, PA

Date Sampled	Keyfile-Related		EDD-Related										Check for Concerning Qualifiers	Comments
	Check Lab Login and Keyfile	Check COC/Field Notes Uploaded	Check Sample IDs	Check Analyte List Reported	Review EDD for Issues	Check Dates, Matrix and Sample Type	Multiple Results					Resolved		
							Reported	Surrogate Recovery	Data Qualifiers	Reasonable Limits	Other			
10/7/2021	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2154810-13 (PB-886-27-SS01): VOCs reported for two runs. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. If both results are detected, the higher of detections is selected as reportable; if one result is detected and one is non-detect, the detection is selected as reportable; if both results are non-detect, the lower reporting limit is selected as reportable.
12/6/2021	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
12/9/2021	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
7/8/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
7/8/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
7/11/2022	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2236779-07 (PB-848-07-SS01): VOCs reported for two runs. The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported. L2236779-11 (PB-848-11-SS01): VOCs reported for two runs. The IS response(s) for fluorobenzene (223%) was above the acceptance criteria due to obvious interferences. The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (199%); however, low-level re-analysis was not performed due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported. L2236779-18 (PB-848-18-SS01): VOCs reported for two runs. The IS response(s) for fluorobenzene (422%) and the surrogate recoveries for dibromofluoromethane (27%) and 4-bromofluorobenzene (262%) were outside the acceptance criteria due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.
7/11/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
7/12/2022	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2236962-01 (PB-881-01-SS01): VOCs reported for two runs. The IS response(s) for 1,4-dichlorobenzene-d4 (43%) and the surrogate recovery for 4-bromofluorobenzene (3132%) were outside the acceptance criteria due to obvious interferences. The run with detections is selected as reportable and the run with non-detects is not reported. The high run is not reportable and the low run is reported. L2236962-07 (PB-881-07-SS01): VOCs reported for two runs. The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (507%); however, the sample was not re-analyzed due to coelution with an obvious interference. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported. L2236962-21 (DUP-41): VOCs reported for two runs. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported.
7/12/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
7/13/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
7/13/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
7/14/2022	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2237705-07 (PB-884-08-SS01): VOCs reported for two runs. The surrogate recovery was outside the acceptance criteria for 1,2-dichloroethane-d4 (131%) due to obvious interferences. The run with surrogate recoveries within acceptance criteria is selected as reportable. The low run is not reportable and the high run is reported. L2237705-22 (TB-071422): 1,2-Dibromoethane reported for two runs. Result reported under method 8011 is reported.
7/14/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
7/15/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
7/15/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
12/19/2022	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	
1/3/2023, 1/4/2023	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	L2300373-21 (PB-847-15R-17.0-17.5): VOCs reported for two runs. The IS response for fluorobenzene (479%) and the surrogate recoveries for dibromofluoromethane (35%) and 4-bromofluorobenzene (675%) were outside the acceptance criteria due to obvious interferences. The run with more surrogates recoveries outside acceptance criteria is not reported and the run with fewer surrogate recoveries outside of acceptance criteria is selected as reportable. The high run is reported and the low run is not reportable.
1/4/2023	Pass	Pass	Pass	Pass	Pass	Pass	Yes	Yes	Yes	Yes	Yes	Yes	Pass	L2300364-01 through -06 (TG04-MW-03-230104, TG04-MW-03-230104D, TG07-MW-02-230104, TB-230104-2, FB-230104-2, TG07-MW-03-230104): VOCs (1,2-Dibromomethane) reported for two runs. The WG1730299-2 LCS recovery for 1,2-dibromoethane (130%), associated with L2300364-01 through -06, is outside Alpha's acceptance criteria, but within the acceptance criteria specified in the method. The WG1730299-4 MSD recovery for 1,2-dibromoethane (125%), performed on L2300364-03, is outside Alpha's acceptance criteria, but within the acceptance criteria specified in the method. If both results are non-detect, the lower reporting limit is selected as reportable.
1/5/2023, 1/6/2023	Pass	Pass	Pass	Pass	Pass	Pass	No						Pass	

Table I7
RPD Calculations
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Dataset	Area	Location Code	Sample Name	Sample Date	Chem Group	PARAMNAME	CASRN	Total or Dissolved	RPD	Ratio	Primary Result	Primary Qualifier	Primary Limit	Duplicate Result	Duplicate Qualifier	Duplicate Limit	Average Result	Average Qualifier	Average Limit	Result Unit		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	Benzene	71-43-2	T	43%	1.5		U	1.10E-03		U	7.10E-04		U	9.05E-04	mg/kg		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	Cumene	98-82-8	T	115%	3.7		U	2.20E-03	8.20E-03		U	1.40E-03		J	1.80E-03	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	1,2-Dibromoethane	106-93-4	T	43%	1.5		U	1.10E-03		U	7.10E-04		U	9.05E-04	mg/kg		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	1,2-Dichloroethane	107-06-2	T	44%	1.6		U	2.20E-03		U	1.40E-03		U	1.80E-03	mg/kg		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	Ethyl Benzene	100-41-4	T	44%	1.6		U	2.20E-03		U	1.40E-03		U	1.80E-03	mg/kg		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	Methyl tert-butyl ether	1634-04-4	T	42%	1.5		U	4.30E-03		U	2.80E-03		U	3.55E-03	mg/kg		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	Toluene	108-88-3	T	44%	1.6		U	2.20E-03		U	1.40E-03		U	1.80E-03	mg/kg		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	1,2,4-Trimethylbenzene	95-63-6	T	42%	1.5		U	4.30E-03		U	2.80E-03		U	3.55E-03	mg/kg		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	1,3,5-Trimethylbenzene	108-67-8	T	42%	1.5		U	4.30E-03		U	2.80E-03		U	3.55E-03	mg/kg		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	VOC	Xylenes (total)	1330-20-7	T	42%	1.5		U	4.30E-03		U	2.80E-03		U	3.55E-03	mg/kg		
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Anthracene	120-12-7	T	29%	1.3	1.60E-01		U	1.20E-01		U	1.20E-01	1.10E-01	J	1.20E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Benzo(a)anthracene	56-55-3	T	55%	1.8	2.10E-01		U	1.20E-01		U	1.20E-01	1.35E-01	J	1.20E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Benzo(a)pyrene	50-32-8	T	12%	1.1	1.80E-01		U	1.60E-01		U	1.60E-01	1.30E-01	J	1.60E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Benzo(b)fluoranthene	205-99-2	T	34%	1.4	1.70E-01		U	1.20E-01		U	1.20E-01	1.15E-01	J	1.20E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Benzo(g,h,i)perylene	191-24-2	T	17%	1.2	1.90E-01		U	1.60E-01		U	1.60E-01	1.35E-01	J	1.60E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Chrysene	218-01-9	T	74%	2.2	2.60E-01		U	1.20E-01		U	1.20E-01	1.60E-01	J	1.20E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Fluorene	86-73-7	T	32%	1.4	6.10E-02	J	2.00E-01	4.40E-02	J	2.00E-01	5.25E-02	J	2.00E-01	2.00E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	T	37%	1.5	1.10E-01	J	1.60E-01		U	1.60E-01	9.50E-02	J	1.60E-01	1.60E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Naphthalene	91-20-3	T	14%	1.2	2.30E-01		U	2.00E-01		U	2.00E-01	1.65E-01	J	2.00E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Phenanthrene	85-01-8	T	146%	6.4	7.70E-01		U	1.20E-01		U	1.20E-01	4.15E-01	J	1.20E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	SVOC	Pyrene	129-00-0	T	182%	21.0	4.40E-01		U	1.20E-01	2.10E-02	J	1.20E-01	2.31E-01	J	1.20E-01	mg/kg	
Soil	AST	Tank Group 04	PB-191-07	PB-191-07-SS01	12/9/2021	INORG	Lead	7439-92-1	T	21%	1.2	1.76E+02		U	4.59E+00	2.18E+02		U	4.72E+00	1.97E+02		4.66E+00	mg/kg
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	Benzene	71-43-2	T	195%	79.1		U	8.60E-04	6.80E-02		U	3.60E-02	3.42E-02	J	1.84E-02	mg/kg	
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	Cumene	98-82-8	T	199%	588.2		U	1.70E-03	1.00E+00		U	7.10E-02	5.00E-01	J	3.64E-02	mg/kg	
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	1,2-Dibromoethane	106-93-4	T	191%	41.9		U	8.60E-04		U	3.60E-02		U	1.84E-02	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	1,2-Dichloroethane	107-06-2	T	191%	41.8		U	1.70E-03		U	7.10E-02		U	3.64E-02	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	Ethyl Benzene	100-41-4	T	199%	329.4		U	1.70E-03	5.60E-01		U	7.10E-02	2.80E-01	J	3.64E-02	mg/kg	
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	Methyl tert-butyl ether	1634-04-4	T	191%	41.2		U	3.40E-03		U	1.40E-01		U	7.17E-02	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	Toluene	108-88-3	T	187%	30.0		U	1.70E-03	5.10E-02	J	7.10E-02	2.59E-02	J	3.64E-02	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	1,2,4-Trimethylbenzene	95-63-6	T	200%	4411.8		U	3.40E-03	1.50E+01		U	1.40E-01	7.50E+00	J	7.17E-02	mg/kg	
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	1,3,5-Trimethylbenzene	108-67-8	T	200%	1411.8		U	3.40E-03	4.80E+00		U	1.40E-01	2.40E+00	J	7.17E-02	mg/kg	
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	VOC	Xylenes (total)	1330-20-7	T	200%	8647.1		U	3.40E-03	2.94E+01	J	1.40E-01	1.47E+01	J	7.17E-02	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Anthracene	120-12-7	T	18%	1.2		U	1.20E-01		U	1.00E-01		U	1.10E-01	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Benzo(a)anthracene	56-55-3	T	88%	2.6	6.90E-02	J	1.20E-01	2.70E-02	J	1.00E-01	4.80E-02	J	1.10E-01	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Benzo(a)pyrene	50-32-8	T	90%	2.6	5.30E-02	J	1.50E-01		U	1.40E-01	6.15E-02	J	1.45E-01	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Benzo(b)fluoranthene	205-99-2	T	62%	1.9	5.50E-02	J	1.20E-01	2.90E-02	J	1.00E-01	4.20E-02	J	1.10E-01	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Benzo(g,h,i)perylene	191-24-2	T	41%	1.5	4.10E-02	J	1.50E-01	2.70E-02	J	1.40E-01	3.40E-02	J	1.45E-01	mg/kg		
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Chrysene	218-01-9	T	45%	1.6	9.50E-02	J	1.20E-01	1.50E-01		U	1.00E-01	1.23E-01	J	1.10E-01	mg/kg	
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Fluorene	86-73-7	T	69%	2.1		U	1.90E-01	3.90E-01		U	1.70E-01	2.43E-01	J	1.80E-01	mg/kg	
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Naphthalene	91-20-3	T	192%	51.9	5.20E-02	J	1.90E-01	2.70E+00		U	1.70E-01	1.38E+00	J	1.80E-01	mg/kg	
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Phenanthrene	85-01-8	T	147%	6.6	1.50E-01		U	1.20E-01	9.90E-01		U	1.00E-01	5.70E-01	J	1.10E-01	mg/kg
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	SVOC	Pyrene	129-00-0	T	72%	2.1	1.80E-01		U	1.20E-01	8.50E-02	J	1.00E-01	1.33E-01	J	1.10E-01	mg/kg	
Soil	AST	Tank Group 04	PB-826-15	PB-826-15-SS01	7/14/2022	INORG	Lead	7439-92-1	T	196%	95.3	1.62E+02		U	2.20E+00	1.70E+00	J	2.11E+00	8.19E+01	J	2.16E+00	mg/kg	
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	Benzene	71-43-2	T	165%	10.5	6.00E-03		U	8.00E-04		U	5.70E-04	3.14E-03	J	6.85E-04	mg/kg	
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	Cumene	98-82-8	T	157%	8.4	9.20E-03		U	1.60E-03		U	1.10E-03	4.88E-03	J	1.35E-03	mg/kg	
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	1,2-Dibromoethane	106-93-4	T	34%	1.4		U	8.00E-04		U	5.70E-04		U	6.85E-04	mg/kg		
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	1,2-Dichloroethane	107-06-2	T	37%	1.5		U	1.60E-03		U	1.10E-03		U	1.35E-03	mg/kg		
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	Ethyl Benzene	100-41-4	T	47%	1.6	6.80E-04	J	1.60E-03		U	1.10E-03		J	1.35E-03	mg/kg		
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	Methyl tert-butyl ether	1634-04-4	T	33%	1.4		U	3.20E-03		U	2.30E-03		U	2.75E-03	mg/kg		
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	Toluene	108-88-3	T	81%	2.4	2.60E-03		U	1.60E-03		U	1.10E-03	1.58E-03	J	1.35E-03	mg/kg	
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	1,2,4-Trimethylbenzene	95-63-6	T	49%	1.6	1.40E-03	J	3.20E-03		U	2.30E-03	1.28E-03	J	2.75E-03	mg/kg		
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	1,3,5-Trimethylbenzene	108-67-8	T	0%	1.0	2.30E-03	J	3.20E-03		U	2.30E-03	1.73E-03	J	2.75E-03	mg/kg		
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	VOC	Xylenes (total)	1330-20-7	T	111%	3.5	8.00E-03	J	3.20E-03		U	2.30E-03	4.58E-03	J	2.75E-03	mg/kg		
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	SVOC	Anthracene	120-12-7	T	26%	1.3		U	1.20E-01	9.20E-02	J	1.10E-01	7.60E-02	J	1.15E-01	mg/kg		
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	SVOC	Benzo(a)anthracene	56-55-3	T	98%	2.9	1.50E-01		U	1.20E-01	4.40E-01		U	1.10E-01	2.95E-01	J	1.15E-01	mg/kg
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	SVOC	Benzo(a)pyrene	50-32-8	T	91%	2.7	1.50E-01	J	1.60E-01	4.00E-01		U	1.50E-01	2.75E-01	J	1.55E-01	mg/kg	
Soil	AST	Tank Group 04	PB-840-01	PB-840-01-SS01	7/8/2022	SVOC	Benzo(b)flu																

Table I7
RPD Calculations
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Dataset	Area	Location Code	Sample Name	Sample Date	Chem Group	PARAMNAME	CASRN	Total or Dissolved	RPD	Ratio	Primary Result	Primary Qualifier	Primary Limit	Duplicate Result	Duplicate Qualifier	Duplicate Limit	Average Result	Average Qualifier	Average Limit	Result Unit
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	SVOC	Benzo(a)anthracene	56-55-3	T	75%	2.2	2.20E-01		1.10E-01		U	1.00E-01	1.35E-01	J	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	SVOC	Benzo(a)pyrene	50-32-8	T	56%	1.8	2.30E-01		1.50E-01		U	1.30E-01	1.48E-01	J	1.40E-01	mg/kg
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	SVOC	Benzo(b)fluoranthene	205-99-2	T	95%	2.8	2.80E-01		1.10E-01		U	1.00E-01	1.65E-01	J	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	SVOC	Benzo(g,h,i)perylene	191-24-2	T	17%	1.2	1.10E-01	J	1.50E-01		U	1.30E-01	8.75E-02	J	1.40E-01	mg/kg
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	SVOC	Chrysene	218-01-9	T	75%	2.2	2.20E-01		1.10E-01		U	1.00E-01	1.35E-01	J	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	SVOC	Fluorene	86-73-7	T	147%	6.5	2.60E-02	J	1.90E-01		U	1.70E-01	5.55E-02	J	1.80E-01	mg/kg
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	SVOC	Naphthalene	91-20-3	T	11%	1.1		U	1.90E-01		U	1.70E-01		U	1.80E-01	mg/kg
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	SVOC	Phenanthrene	85-01-8	T	67%	2.0	2.00E-01		1.10E-01		U	1.00E-01	1.25E-01	J	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	SVOC	Pyrene	129-00-0	T	111%	3.5	3.50E-01		1.10E-01		U	1.00E-01	2.00E-01	J	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-841-09	PB-841-09-SS01	7/12/2022	INORG	Lead	7439-92-1	T	33%	1.4	5.00E+00		2.17E+00	3.60E+00		2.00E+00	4.30E+00		2.09E+00	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	Benzene	71-43-2	T	93%	2.8	2.40E-04	J	6.30E-04		U	6.60E-04	2.85E-04	J	6.45E-04	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	Cumene	98-82-8	T	133%	5.0	2.60E-04	J	1.30E-03		U	1.30E-03	4.55E-04	J	1.30E-03	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	1,2-Dibromoethane	106-93-4	T	5%	1.0		U	6.30E-04		U	6.60E-04		U	6.45E-04	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	1,2-Dichloroethane	107-06-2	T	0%	1.0		U	1.30E-03		U	1.30E-03		U	1.30E-03	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	Ethyl Benzene	100-41-4	T	0%	1.0		U	1.30E-03		U	1.30E-03		U	1.30E-03	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	Methyl tert-butyl ether	1634-04-4	T	141%	5.8	4.50E-04	J	2.50E-03		U	2.60E-03	8.75E-04	J	2.55E-03	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	Toluene	108-88-3	T	0%	1.0		U	1.30E-03		U	1.30E-03		U	1.30E-03	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	1,2,4-Trimethylbenzene	95-63-6	T	4%	1.0		U	2.50E-03		U	2.60E-03		U	2.55E-03	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	1,3,5-Trimethylbenzene	108-67-8	T	4%	1.0		U	2.50E-03		U	2.60E-03		U	2.55E-03	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	VOC	Xylenes (total)	1330-20-7	T	4%	1.0		U	2.50E-03		U	2.60E-03		U	2.55E-03	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Anthracene	120-12-7	T	9%	1.1		U	1.10E-01		U	1.20E-01		U	1.15E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Benzo(a)anthracene	56-55-3	T	133%	5.0		U	1.10E-01	2.20E-02	J	1.20E-01	3.85E-02	J	1.15E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Benzo(a)pyrene	50-32-8	T	6%	1.1		U	1.50E-01		U	1.60E-01		U	1.55E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Benzo(b)fluoranthene	205-99-2	T	9%	1.1		U	1.10E-01		U	1.20E-01		U	1.15E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Benzo(g,h,i)perylene	191-24-2	T	6%	1.1		U	1.50E-01		U	1.60E-01		U	1.55E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Chrysene	218-01-9	T	9%	1.1		U	1.10E-01		U	1.20E-01		U	1.15E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Fluorene	86-73-7	T	5%	1.1		U	1.90E-01		U	2.00E-01		U	1.95E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Naphthalene	91-20-3	T	5%	1.1		U	1.90E-01		U	2.00E-01		U	1.95E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Phenanthrene	85-01-8	T	124%	4.2		U	1.10E-01	2.60E-02	J	1.20E-01	4.05E-02	J	1.15E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	SVOC	Pyrene	129-00-0	T	124%	4.2		U	1.10E-01	2.60E-02	J	1.20E-01	4.05E-02	J	1.15E-01	mg/kg
Soil	AST	Tank Group 04	PB-843-11	PB-843-11-SS01	7/11/2022	INORG	Lead	7439-92-1	T	102%	3.1	5.83E+00		2.25E+00	1.80E+01		4.67E+00	1.19E+01		3.46E+00	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	Benzene	71-43-2	T	4%	1.0		U	4.60E-04		U	4.40E-04		U	4.50E-04	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	Cumene	98-82-8	T	4%	1.0		U	9.30E-04		U	8.90E-04		U	9.10E-04	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	1,2-Dibromoethane	106-93-4	T	4%	1.0		U	4.60E-04		U	4.40E-04		U	4.50E-04	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	1,2-Dichloroethane	107-06-2	T	4%	1.0		U	9.30E-04		U	8.90E-04		U	9.10E-04	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	Ethyl Benzene	100-41-4	T	4%	1.0		U	9.30E-04		U	8.90E-04		U	9.10E-04	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	Methyl tert-butyl ether	1634-04-4	T	0%	1.0		U	1.80E-03		U	1.80E-03		U	1.80E-03	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	Toluene	108-88-3	T	4%	1.0		U	9.30E-04		U	8.90E-04		U	9.10E-04	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	1,2,4-Trimethylbenzene	95-63-6	T	0%	1.0		U	1.80E-03		U	1.80E-03		U	1.80E-03	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	1,3,5-Trimethylbenzene	108-67-8	T	0%	1.0		U	1.80E-03		U	1.80E-03		U	1.80E-03	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	VOC	Xylenes (total)	1330-20-7	T	0%	1.0		U	1.80E-03		U	1.80E-03		U	1.80E-03	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Anthracene	120-12-7	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Benzo(a)anthracene	56-55-3	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Benzo(a)pyrene	50-32-8	T	0%	1.0		U	1.60E-01		U	1.60E-01		U	1.60E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Benzo(b)fluoranthene	205-99-2	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Benzo(g,h,i)perylene	191-24-2	T	0%	1.0		U	1.60E-01		U	1.60E-01		U	1.60E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Chrysene	218-01-9	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Fluorene	86-73-7	T	0%	1.0		U	2.00E-01		U	2.00E-01		U	2.00E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Naphthalene	91-20-3	T	0%	1.0		U	2.00E-01		U	2.00E-01		U	2.00E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Phenanthrene	85-01-8	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	SVOC	Pyrene	129-00-0	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-847-02	PB-847-02-SS01	7/8/2022	INORG	Lead	7439-92-1	T	3%	1.0	4.67E+00		2.42E+00	4.52E+00		2.34E+00	4.60E+00		2.38E+00	mg/kg
Soil	AST	Tank Group 04	PB-848-05	PB-848-05-SS01	7/11/2022	VOC	Benzene	71-43-2	T	13%	1.1		U	5.60E-04		U	4.90E-04		U	5.25E-04	mg/kg
Soil	AST	Tank Group 04	PB-848-05	PB-848-05-SS01	7/11/2022	VOC	Cumene	98-82-8	T	12%	1.1		U	1.10E-03		U	9.80E-04		U	1.04E-03	mg/kg
Soil	AST	Tank Group 04	PB-848-05	PB-848-05-SS01	7/11/2022	VOC	1,2-Dibromoethane	106-93-4	T	13%	1.1		U	5.60E-04		U	4.90E-04		U	5.25E-04	mg/kg
Soil	AST	Tank Group 04	PB-848-05	PB-848-05-SS01	7/11/2022	VOC	1,2-Dichloroethane	107-06-2	T	12%	1.1		U	1.10E-03		U	9.80E-04		U	1.04E-03	mg/kg
Soil	AST	Tank Group 04	PB-848-05	PB-848-05-SS01	7/11/2022	VOC	Ethyl Benzene	100-41-4	T	12%	1.1		U	1.10E-03		U	9.80E-04		U	1.04E-03	mg/kg
Soil	AST	Tank Group 04	PB-848-05	PB-848-05-SS01	7/11/2022	VOC	Methyl tert-butyl ether	1634-04-4	T	26%	1.3	7.40E-04	J	2.20E-03	5.70E-04	J	2.00E-03	6.55E-04	J	2.10E-03	mg/kg
Soil	AST	Tank Group 04	PB-848-05	PB-848-05-SS01	7/11/2022	VOC	Toluene	108-88-3	T	12%	1.1		U	1.10E-03		U	9.80E-04		U	1.04E-03	mg/kg
Soil	AST	Tank Group 04	PB-848-05	PB-848-05-SS01	7/11/2022	VOC	1,2,4-Trimethylbenzene	95-63-6	T	10%	1.1		U	2.20E-03		U	2.00E-03		U	2	

Table I7
RPD Calculations
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Dataset	Area	Location Code	Sample Name	Sample Date	Chem Group	PARAMNAME	CASRN	Total or Dissolved	RPD	Ratio	Primary Result	Primary Qualifier	Primary Limit	Duplicate Result	Duplicate Qualifier	Duplicate Limit	Average Result	Average Qualifier	Average Limit	Result Unit
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	VOC	1,2-Dibromoethane	106-93-4	T	42%	1.5		U	2.10E-02		U	3.20E-02		U	2.65E-02	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	VOC	1,2-Dichloroethane	107-06-2	T	43%	1.5		U	4.20E-02		U	6.50E-02		U	5.35E-02	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	VOC	Ethyl Benzene	100-41-4	T	43%	1.5		U	4.20E-02		U	6.50E-02		U	5.35E-02	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	VOC	Methyl tert-butyl ether	1634-04-4	T	43%	1.5		U	8.40E-02		U	1.30E-01		U	1.07E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	VOC	Toluene	108-88-3	T	43%	1.5		U	4.20E-02		U	6.50E-02		U	5.35E-02	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	VOC	1,2,4-Trimethylbenzene	95-63-6	T	72%	2.1	4.70E-01		8.40E-02	1.00E+00		1.30E-01	7.35E-01		1.07E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	VOC	1,3,5-Trimethylbenzene	108-67-8	T	69%	2.0	2.20E-01		8.40E-02	4.50E-01		1.30E-01	3.35E-01		1.07E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	VOC	Xylenes (total)	1330-20-7	T	16%	1.2	5.90E-02	J	8.40E-02	6.95E-02	J	1.30E-01	6.43E-01	J	1.07E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Anthracene	120-12-7	T	45%	1.6	4.00E-02	J	1.00E-01	6.30E-02	J	1.10E-01	5.15E-02	J	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Benzo(a)anthracene	56-55-3	T	34%	1.4	2.20E-02	J	1.00E-01	3.10E-02	J	1.10E-01	2.65E-02	J	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Benzo(a)pyrene	50-32-8	T	0%	1.0		U	1.40E-01		U	1.40E-01		U	1.40E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Benzo(b)fluoranthene	205-99-2	T	10%	1.1		U	1.00E-01		U	1.10E-01		U	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Benzo(g,h,i)perylene	191-24-2	T	0%	1.0		U	1.40E-01		U	1.40E-01		U	1.40E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Chrysene	218-01-9	T	53%	1.7	8.70E-02	J	1.00E-01	1.50E-01		1.10E-01	1.19E-01	J	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Fluorene	86-73-7	T	56%	1.8	2.30E-01		1.70E-01	4.10E-01		1.80E-01	3.20E-01		1.75E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Naphthalene	91-20-3	T	170%	12.5	4.80E-02	J	1.70E-01	6.00E-01		1.80E-01	3.24E-01	J	1.75E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Phenanthrene	85-01-8	T	59%	1.8	4.80E-01		1.00E-01	8.80E-01		1.10E-01	6.80E-01		1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	SVOC	Pyrene	129-00-0	T	44%	1.6	6.40E-02	J	1.00E-01	1.00E-01	J	1.10E-01	8.20E-02	J	1.05E-01	mg/kg
Soil	AST	Tank Group 04	PB-881-07	PB-881-07-SS01	7/12/2022	INORG	Lead	7439-92-1	T	0%	1.0	1.48E+00	J	1.98E+00	1.48E+00	J	2.05E+00	1.48E+00	J	2.02E+00	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	Benzene	71-43-2	T	9%	1.1		U	5.90E-04		U	5.40E-04		U	5.65E-04	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	Cumene	98-82-8	T	9%	1.1		U	1.20E-03		U	1.10E-03		U	1.15E-03	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	1,2-Dibromoethane	106-93-4	T	9%	1.1		U	5.90E-04		U	5.40E-04		U	5.65E-04	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	1,2-Dichloroethane	107-06-2	T	9%	1.1		U	1.20E-03		U	1.10E-03		U	1.15E-03	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	Ethyl Benzene	100-41-4	T	9%	1.1		U	1.20E-03		U	1.10E-03		U	1.15E-03	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	Methyl tert-butyl ether	1634-04-4	T	9%	1.1		U	2.30E-03		U	2.20E-03		U	2.20E-03	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	Toluene	108-88-3	T	9%	1.1		U	1.20E-03		U	1.10E-03		U	1.15E-03	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	1,2,4-Trimethylbenzene	95-63-6	T	9%	1.1		U	2.30E-03		U	2.10E-03		U	2.20E-03	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	1,3,5-Trimethylbenzene	108-67-8	T	9%	1.1		U	2.30E-03		U	2.10E-03		U	2.20E-03	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	VOC	Xylenes (total)	1330-20-7	T	9%	1.1		U	2.30E-03		U	2.10E-03		U	2.20E-03	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Anthracene	120-12-7	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Benzo(a)anthracene	56-55-3	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Benzo(a)pyrene	50-32-8	T	0%	1.0		U	1.60E-01		U	1.60E-01		U	1.60E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Benzo(b)fluoranthene	205-99-2	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Benzo(g,h,i)perylene	191-24-2	T	0%	1.0		U	1.60E-01		U	1.60E-01		U	1.60E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Chrysene	218-01-9	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Fluorene	86-73-7	T	0%	1.0		U	2.00E-01		U	2.00E-01		U	2.00E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Naphthalene	91-20-3	T	0%	1.0		U	2.00E-01		U	2.00E-01		U	2.00E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Phenanthrene	85-01-8	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	SVOC	Pyrene	129-00-0	T	0%	1.0		U	1.20E-01		U	1.20E-01		U	1.20E-01	mg/kg
Soil	AST	Tank Group 04	PB-884-12	PB-884-12-SS01	12/3/2021	INORG	Lead	7439-92-1	T	162%	9.6	5.65E+00		2.40E+00	5.43E+01		2.37E+00	3.00E+01		2.39E+00	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	Benzene	71-43-2	T	11%	1.1		U	4.10E-04		U	4.60E-04		U	4.35E-04	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	Cumene	98-82-8	T	13%	1.1		U	8.20E-04		U	9.30E-04		U	8.75E-04	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	1,2-Dibromoethane	106-93-4	T	11%	1.1		U	4.10E-04		U	4.60E-04		U	4.35E-04	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	1,2-Dichloroethane	107-06-2	T	13%	1.1		U	8.20E-04		U	9.30E-04		U	8.75E-04	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	Ethyl Benzene	100-41-4	T	13%	1.1		U	8.20E-04		U	9.30E-04		U	8.75E-04	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	Methyl tert-butyl ether	1634-04-4	T	12%	1.1		U	1.60E-03		U	1.80E-03		U	1.70E-03	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	Toluene	108-88-3	T	13%	1.1		U	8.20E-04		U	9.30E-04		U	8.75E-04	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	1,2,4-Trimethylbenzene	95-63-6	T	12%	1.1		U	1.60E-03		U	1.80E-03		U	1.70E-03	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	1,3,5-Trimethylbenzene	108-67-8	T	12%	1.1		U	1.60E-03		U	1.80E-03		U	1.70E-03	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	VOC	Xylenes (total)	1330-20-7	T	12%	1.1		U	1.60E-03		U	1.80E-03		U	1.70E-03	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Anthracene	120-12-7	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Benzo(a)anthracene	56-55-3	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Benzo(a)pyrene	50-32-8	T	0%	1.0		U	1.50E-01		U	1.50E-01		U	1.50E-01	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Benzo(b)fluoranthene	205-99-2	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Benzo(g,h,i)perylene	191-24-2	T	0%	1.0		U	1.50E-01		U	1.50E-01		U	1.50E-01	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Chrysene	218-01-9	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Fluorene	86-73-7	T	5%	1.1		U	1.90E-01		U	1.80E-01		U	1.85E-01	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Naphthalene	91-20-3	T	5%	1.1		U	1.90E-01		U	1.80E-01		U	1.85E-01	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Phenanthrene	85-01-8	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg
Soil	AST	Tank Group 04	PB-885-17	PB-885-17-SS01	7/15/2022	SVOC	Pyrene	129-00-0	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1	

Table 17
RPD Calculations
Tank Group 04
Philadelphia Energy Solutions Refining and Marketing, LLC, Philadelphia, PA

Matrix	Dataset	Area	Location Code	Sample Name	Sample Date	Chem Group	PARAMNAME	CASRN	Total or Dissolved	RPD	Ratio	Primary Result	Primary Qualifier	Primary Limit	Duplicate Result	Duplicate Qualifier	Duplicate Limit	Average Result	Average Qualifier	Average Limit	Result Unit	
Soil	AST	Tank Group 04	PB-885-23	PB-885-23-SS01	12/7/2021	SVOC	Benzo(g,h,i)perylene	191-24-2	T	183%	22.9		U	1.40E-01		U	3.20E+00		U	1.67E+00	mg/kg	
Soil	AST	Tank Group 04	PB-885-23	PB-885-23-SS01	12/7/2021	SVOC	Chrysene	218-01-9	T	184%	24.0		U	1.00E-01		U	2.40E+00		U	1.25E+00	mg/kg	
Soil	AST	Tank Group 04	PB-885-23	PB-885-23-SS01	12/7/2021	SVOC	Fluorene	86-73-7	T	195%	82.4		U	1.70E-01	1.40E+01		4.00E+00	7.04E+00	J	2.09E+00	mg/kg	
Soil	AST	Tank Group 04	PB-885-23	PB-885-23-SS01	12/7/2021	SVOC	Naphthalene	91-20-3	T	184%	23.5		U	1.70E-01		U	4.00E+00		U	2.09E+00	mg/kg	
Soil	AST	Tank Group 04	PB-885-23	PB-885-23-SS01	12/7/2021	SVOC	Phenanthrene	85-01-8	T	199%	290.0		U	1.00E-01	2.90E+01		2.40E+00	1.45E+01	J	1.25E+00	mg/kg	
Soil	AST	Tank Group 04	PB-885-23	PB-885-23-SS01	12/7/2021	SVOC	Pyrene	129-00-0	T	187%	29.0		U	1.00E-01	2.90E+00		2.40E+00	1.48E+00	J	1.25E+00	mg/kg	
Soil	AST	Tank Group 04	PB-885-23	PB-885-23-SS01	12/7/2021	INORG	Lead	7439-92-1	T	82%	2.4	2.80E+00			2.08E+00	6.69E+00		2.29E+00	4.75E+00		2.19E+00	mg/kg
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	Benzene	71-43-2	T	33%	1.4		U	4.50E-04		U	6.30E-04		U	5.40E-04	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	Cumene	98-82-8	T	9%	1.1		U	9.00E-04	9.80E-04	J	1.30E-03	7.15E-04	J	1.10E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	1,2-Dibromoethane	106-93-4	T	33%	1.4		U	4.50E-04		U	6.30E-04		U	5.40E-04	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	1,2-Dichloroethane	107-06-2	T	36%	1.4		U	9.00E-04		U	1.30E-03		U	1.10E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	Ethyl Benzene	100-41-4	T	93%	2.7		U	9.00E-04	3.30E-04	J	1.30E-03	3.90E-04	J	1.10E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	Methyl tert-butyl ether	1634-04-4	T	33%	1.4		U	1.80E-03		U	2.50E-03		U	2.15E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	Toluene	108-88-3	T	36%	1.4		U	9.00E-04		U	1.30E-03		U	1.10E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	1,2,4-Trimethylbenzene	95-63-6	T	173%	13.9		U	1.80E-03	2.50E-02		2.50E-03	1.30E-02	J	2.15E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	1,3,5-Trimethylbenzene	108-67-8	T	172%	13.3		U	1.80E-03	2.40E-02		2.50E-03	1.25E-02	J	2.15E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	VOC	Xylenes (total)	1330-20-7	T	14%	1.2		U	1.80E-03	2.07E-03	J	2.50E-03	1.49E-03	J	2.15E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Anthracene	120-12-7	T	0%	1.0		U	1.00E-01		U	1.00E-01		U	1.00E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Benzo(a)anthracene	56-55-3	T	0%	1.0		U	1.00E-01		U	1.00E-01		U	1.00E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Benzo(a)pyrene	50-32-8	T	0%	1.0		U	1.40E-01		U	1.40E-01		U	1.40E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Benzo(b)fluoranthene	205-99-2	T	0%	1.0		U	1.00E-01		U	1.00E-01		U	1.00E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Benzo(g,h,i)perylene	191-24-2	T	0%	1.0		U	1.40E-01		U	1.40E-01		U	1.40E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Chrysene	218-01-9	T	0%	1.0		U	1.00E-01		U	1.00E-01		U	1.00E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Fluorene	86-73-7	T	0%	1.0		U	1.80E-01		U	1.80E-01		U	1.80E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Naphthalene	91-20-3	T	0%	1.0		U	1.80E-01		U	1.80E-01		U	1.80E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Phenanthrene	85-01-8	T	0%	1.0		U	1.00E-01		U	1.00E-01		U	1.00E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	SVOC	Pyrene	129-00-0	T	0%	1.0		U	1.00E-01		U	1.00E-01		U	1.00E-01	MG/KG	
Soil	AST	Tank Group 04	PB-886-09	PB-886-09-SS01	10/7/2021	INORG	Lead	7439-92-1	T	6%	1.1	1.76E+00	J	2.10E+00	1.87E+00	J	2.09E+00	1.82E+00	J	2.10E+00	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	Benzene	71-43-2	T	31%	1.4		U	6.10E-04		U	8.30E-04		U	7.20E-04	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	Cumene	98-82-8	T	34%	1.4		U	1.20E-03		U	1.70E-03		U	1.45E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	1,2-Dibromoethane	106-93-4	T	31%	1.4		U	6.10E-04		U	8.30E-04		U	7.20E-04	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	1,2-Dichloroethane	107-06-2	T	34%	1.4		U	1.20E-03		U	1.70E-03		U	1.45E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	Ethyl Benzene	100-41-4	T	34%	1.4		U	1.20E-03		U	1.70E-03		U	1.45E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	Methyl tert-butyl ether	1634-04-4	T	32%	1.4		U	2.40E-03		U	3.30E-03		U	2.85E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	Toluene	108-88-3	T	34%	1.4		U	1.20E-03		U	1.70E-03		U	1.45E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	1,2,4-Trimethylbenzene	95-63-6	T	32%	1.4		U	2.40E-03		U	3.30E-03		U	2.85E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	1,3,5-Trimethylbenzene	108-67-8	T	32%	1.4		U	2.40E-03		U	3.30E-03		U	2.85E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	VOC	Xylenes (total)	1330-20-7	T	32%	1.4		U	2.40E-03		U	3.30E-03		U	2.85E-03	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Anthracene	120-12-7	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Benzo(a)anthracene	56-55-3	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Benzo(a)pyrene	50-32-8	T	0%	1.0		U	1.50E-01		U	1.50E-01		U	1.50E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Benzo(b)fluoranthene	205-99-2	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Benzo(g,h,i)perylene	191-24-2	T	0%	1.0		U	1.50E-01		U	1.50E-01		U	1.50E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Chrysene	218-01-9	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Fluorene	86-73-7	T	0%	1.0		U	1.80E-01		U	1.80E-01		U	1.80E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Naphthalene	91-20-3	T	0%	1.0		U	1.80E-01		U	1.80E-01		U	1.80E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Phenanthrene	85-01-8	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	SVOC	Pyrene	129-00-0	T	0%	1.0		U	1.10E-01		U	1.10E-01		U	1.10E-01	mg/kg	
Soil	AST	Tank Group 04	PB-886-14	PB-886-14-SS01	7/15/2022	INORG	Lead	7439-92-1	T	6%	1.1	2.16E+00	J	2.18E+00	2.04E+00	J	2.14E+00	2.10E+00	J	2.16E+00	mg/kg	

Appendix J

Laboratory Reports





ANALYTICAL REPORT

Lab Number:	L2154810
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	10/21/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2154810

Report Date: 10/21/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2154810-01	PB-886-01-SS01	SOIL	PHILADELPHIA, PA	10/07/21 08:40	10/07/21
L2154810-02	PB-886-02-SS01	SOIL	PHILADELPHIA, PA	10/07/21 08:50	10/07/21
L2154810-03	PB-886-03-SS01	SOIL	PHILADELPHIA, PA	10/07/21 09:20	10/07/21
L2154810-04	PB-886-04-SS01	SOIL	PHILADELPHIA, PA	10/07/21 09:40	10/07/21
L2154810-05	PB-886-05-SS01	SOIL	PHILADELPHIA, PA	10/07/21 10:10	10/07/21
L2154810-06	PB-886-08-SS01	SOIL	PHILADELPHIA, PA	10/07/21 11:10	10/07/21
L2154810-07	PB-886-09-SS01	SOIL	PHILADELPHIA, PA	10/07/21 11:30	10/07/21
L2154810-08	PB-886-11-SS01	SOIL	PHILADELPHIA, PA	10/07/21 11:35	10/07/21
L2154810-09	PB-886-12-SS01	SOIL	PHILADELPHIA, PA	10/07/21 11:45	10/07/21
L2154810-10	PB-886-18-SS01	SOIL	PHILADELPHIA, PA	10/07/21 13:20	10/07/21
L2154810-11	PB-886-24-SS01	SOIL	PHILADELPHIA, PA	10/07/21 13:30	10/07/21
L2154810-12	PB-886-26-SS01	SOIL	PHILADELPHIA, PA	10/07/21 13:40	10/07/21
L2154810-13	PB-886-27-SS01	SOIL	PHILADELPHIA, PA	10/07/21 13:50	10/07/21
L2154810-14	DUP-21	SOIL	PHILADELPHIA, PA	10/07/21 00:00	10/07/21
L2154810-15	FB-211007	WATER	PHILADELPHIA, PA	10/07/21 12:00	10/07/21
L2154810-16	TB-211007	WATER	PHILADELPHIA, PA	10/07/21 00:00	10/07/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Case Narrative (continued)

Report Submission

October 21, 2021: This final report includes the results of all requested analyses.

October 15, 2021: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The project number was logged per project history.

L2154810-12: The collection date and time on the chain of custody was 07-OCT-21 13:40; however, the collection date/time on the container label was 07-OCT-21 13:50. At the client's request, the collection date/time is reported as 07-OCT-21 13:40.

L2154810-13: The collection date and time on the chain of custody was 07-OCT-21 13:50; however, the collection date/time on the container label was 07-OCT-21 13:40. At the client's request, the collection date/time is reported as 07-OCT-21 13:50.

Volatile Organics

L2154810-06: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2154810-06: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2154810-12: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (277%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2154810-13: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Case Narrative (continued)

that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies. Further re-analysis could not be performed due to the existing vials being compromised. L2154810-14: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (150%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

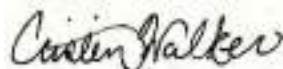
Total Metals

L2154810-05: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

The WG1556309-3 MS recovery, performed on L2154810-01, is outside the acceptance criteria for lead (74%). A post digestion spike was performed and yielded unacceptable recoveries for lead (71%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 10/21/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-01
 Client ID: PB-886-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 08:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 15:29
 Analyst: AJK
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-02
 Client ID: PB-886-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 08:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 22:25
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-03
 Client ID: PB-886-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:20
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 22:46
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-04
 Client ID: PB-886-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 23:06
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	0.00014	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	0.00018	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-05
 Client ID: PB-886-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 10:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 23:27
 Analyst: JC
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00084	0.00022	1
Toluene	ND		mg/kg	0.00084	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	ND		mg/kg	0.00084	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00084	0.00024	1
Xylenes, Total	ND		mg/kg	0.00084	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00084	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-06
 Client ID: PB-886-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 02:10
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.15	0.015	1
Benzene	ND		mg/kg	0.038	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.075	0.019	1
Toluene	ND		mg/kg	0.075	0.041	1
1,2-Dibromoethane	ND		mg/kg	0.038	0.022	1
Ethylbenzene	ND		mg/kg	0.075	0.011	1
p/m-Xylene	ND		mg/kg	0.15	0.042	1
o-Xylene	ND		mg/kg	0.075	0.022	1
Xylenes, Total	ND		mg/kg	0.075	0.022	1
Isopropylbenzene	0.015	J	mg/kg	0.075	0.0082	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.15	0.014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.15	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-07
 Client ID: PB-886-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 23:47
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-08
 Client ID: PB-886-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:35
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 00:07
 Analyst: JC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-09
 Client ID: PB-886-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:45
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 01:29
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00078	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00080	1
o-Xylene	0.00049	J	mg/kg	0.0014	0.00042	1
Xylenes, Total	0.00049	J	mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	0.0014	J	mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	0.0011	J	mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-10
 Client ID: PB-886-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:20
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 00:28
 Analyst: JC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-11
 Client ID: PB-886-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 00:48
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-12
 Client ID: PB-886-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 14:48
 Analyst: AJK
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00025	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.0012		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	0.0032		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.010		mg/kg	0.0023	0.00064	1
o-Xylene	0.015		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.025		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0089		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.14		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.17		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	128		70-130
4-Bromofluorobenzene	277	Q	70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13
 Client ID: PB-886-27-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 01:09
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	0.00018	J	mg/kg	0.00095	0.00013	1
p/m-Xylene	0.00073	J	mg/kg	0.0019	0.00053	1
o-Xylene	0.00034	J	mg/kg	0.00095	0.00028	1
Xylenes, Total	0.0011	J	mg/kg	0.00095	0.00028	1
Isopropylbenzene	0.00021	J	mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	0.34	E	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.051		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13
 Client ID: PB-886-27-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 14:27
 Analyst: AJK
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.062	0.016	1
Toluene	ND		mg/kg	0.062	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	ND		mg/kg	0.062	0.0087	1
p/m-Xylene	ND		mg/kg	0.12	0.034	1
o-Xylene	ND		mg/kg	0.062	0.018	1
Xylenes, Total	ND		mg/kg	0.062	0.018	1
Isopropylbenzene	ND		mg/kg	0.062	0.0067	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-14
 Client ID: DUP-21
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 10/13/21 15:08
 Analyst: AJK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.00033	J	mg/kg	0.0013	0.00018	1
p/m-Xylene	0.00087	J	mg/kg	0.0025	0.00070	1
o-Xylene	0.0012	J	mg/kg	0.0013	0.00037	1
Xylenes, Total	0.0021	J	mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.00098	J	mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.024		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.025		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	150	Q	70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-15
 Client ID: FB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 12:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 10/12/21 15:29
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 10/12/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-15
 Client ID: FB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 12:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 15:50
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	122		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-16
 Client ID: TB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 10/12/21 15:35
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 10/12/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-16
 Client ID: TB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 10/12/21 16:17
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	118		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 10/12/21 15:11
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 10/12/21 14:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 15-16 Batch: WG1557629-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 10/12/21 21:03
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02-05,07-11,13 Batch: WG1558059-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 10/12/21 21:03
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 06 Batch: WG1558061-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/12/21 11:51
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 15-16 Batch: WG1558233-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	116		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 10/13/21 11:11
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13 Batch: WG1558494-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 10/13/21 11:11
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,12,14 Batch: WG1558495-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	101		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 15-16 Batch: WG1557629-2									
1,2-Dibromoethane	116		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02-05,07-11,13 Batch: WG1558059-3 WG1558059-4								
Methyl tert butyl ether	102		102		66-130	0		30
Benzene	100		100		70-130	0		30
1,2-Dichloroethane	94		94		70-130	0		30
Toluene	101		100		70-130	1		30
1,2-Dibromoethane	110		112		70-130	2		30
Ethylbenzene	102		100		70-130	2		30
p/m-Xylene	99		97		70-130	2		30
o-Xylene	98		97		70-130	1		30
Isopropylbenzene	107		104		70-130	3		30
1,3,5-Trimethylbenzene	105		103		70-130	2		30
1,2,4-Trimethylbenzene	104		101		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	90		92		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	89		90		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 06 Batch: WG1558061-3 WG1558061-4								
Methyl tert butyl ether	102		102		66-130	0		30
Benzene	100		100		70-130	0		30
1,2-Dichloroethane	94		94		70-130	0		30
Toluene	101		100		70-130	1		30
1,2-Dibromoethane	110		112		70-130	2		30
Ethylbenzene	102		100		70-130	2		30
p/m-Xylene	99		97		70-130	2		30
o-Xylene	98		97		70-130	1		30
Isopropylbenzene	107		104		70-130	3		30
1,3,5-Trimethylbenzene	105		103		70-130	2		30
1,2,4-Trimethylbenzene	104		101		70-130	3		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	90		92		70-130
Toluene-d8	101		101		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	89		90		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 15-16 Batch: WG1558233-3 WG1558233-4								
Methyl tert butyl ether	99		94		63-130	5		20
Benzene	95		98		70-130	3		20
1,2-Dichloroethane	110		110		70-130	0		20
Toluene	95		100		70-130	5		20
Ethylbenzene	94		99		70-130	5		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		100		70-130	5		20
Isopropylbenzene	91		95		70-130	4		20
1,3,5-Trimethylbenzene	87		91		64-130	4		20
1,2,4-Trimethylbenzene	88		89		70-130	1		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	109		98		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	100		88		70-130
Dibromofluoromethane	114		105		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13 Batch: WG1558494-3 WG1558494-4								
Methyl tert butyl ether	87		95		66-130	9		30
Benzene	95		96		70-130	1		30
1,2-Dichloroethane	87		90		70-130	3		30
Toluene	96		99		70-130	3		30
1,2-Dibromoethane	99		108		70-130	9		30
Ethylbenzene	97		100		70-130	3		30
p/m-Xylene	94		96		70-130	2		30
o-Xylene	93		96		70-130	3		30
Isopropylbenzene	101		103		70-130	2		30
1,3,5-Trimethylbenzene	99		102		70-130	3		30
1,2,4-Trimethylbenzene	98		101		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	89		90		70-130
Toluene-d8	101		103		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	91		89		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,12,14 Batch: WG1558495-3 WG1558495-4								
Methyl tert butyl ether	87		95		66-130	9		30
Benzene	95		96		70-130	1		30
1,2-Dichloroethane	87		90		70-130	3		30
Toluene	96		99		70-130	3		30
1,2-Dibromoethane	99		108		70-130	9		30
Ethylbenzene	97		100		70-130	3		30
p/m-Xylene	94		96		70-130	2		30
o-Xylene	93		96		70-130	3		30
Isopropylbenzene	101		103		70-130	2		30
1,3,5-Trimethylbenzene	99		102		70-130	3		30
1,2,4-Trimethylbenzene	98		101		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	89		89		70-130
Toluene-d8	101		103		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	91		89		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-01
 Client ID: PB-886-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 08:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 11:18
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	190	24.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	150	47.	1
Benzo(b)fluoranthene	ND		ug/kg	120	33.	1
Chrysene	ND		ug/kg	120	20.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	ND		ug/kg	150	23.	1
Fluorene	ND		ug/kg	190	19.	1
Phenanthrene	ND		ug/kg	120	24.	1
Pyrene	ND		ug/kg	120	19.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	72		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-02
 Client ID: PB-886-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 08:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 11:41
 Analyst: JG
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	200	24.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	160	48.	1
Benzo(b)fluoranthene	ND		ug/kg	120	33.	1
Chrysene	ND		ug/kg	120	20.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	ND		ug/kg	160	23.	1
Fluorene	ND		ug/kg	200	19.	1
Phenanthrene	ND		ug/kg	120	24.	1
Pyrene	ND		ug/kg	120	19.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	64		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-03
 Client ID: PB-886-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:20
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/14/21 16:48
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	200	24.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	160	49.	1
Benzo(b)fluoranthene	ND		ug/kg	120	34.	1
Chrysene	ND		ug/kg	120	21.	1
Anthracene	ND		ug/kg	120	39.	1
Benzo(ghi)perylene	ND		ug/kg	160	23.	1
Fluorene	ND		ug/kg	200	19.	1
Phenanthrene	ND		ug/kg	120	24.	1
Pyrene	ND		ug/kg	120	20.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	127	Q	23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	65		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-04
 Client ID: PB-886-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 12:28
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	190	24.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	160	47.	1
Benzo(b)fluoranthene	ND		ug/kg	120	33.	1
Chrysene	ND		ug/kg	120	20.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	ND		ug/kg	160	23.	1
Fluorene	ND		ug/kg	190	19.	1
Phenanthrene	43	J	ug/kg	120	24.	1
Pyrene	ND		ug/kg	120	19.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-05
 Client ID: PB-886-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 10:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 12:52
 Analyst: JG
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	180	21.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	100	29.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	20.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	ND		ug/kg	100	21.	1
Pyrene	ND		ug/kg	100	17.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	94		30-120
4-Terphenyl-d14	89		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-06
 Client ID: PB-886-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 13:15
 Analyst: JG
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	62	J	ug/kg	180	21.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	100	30.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	320		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	880		ug/kg	180	17.	1
Phenanthrene	1700		ug/kg	100	21.	1
Pyrene	100		ug/kg	100	17.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	80		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-07
 Client ID: PB-886-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 13:39
 Analyst: JG
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	180	21.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	100	30.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	ND		ug/kg	100	21.	1
Pyrene	ND		ug/kg	100	17.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	72		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-08
 Client ID: PB-886-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:35
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 14:02
 Analyst: JG
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	180	22.	1
Benzo(a)anthracene	ND		ug/kg	110	21.	1
Benzo(a)pyrene	ND		ug/kg	150	45.	1
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Chrysene	ND		ug/kg	110	19.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	ND		ug/kg	150	22.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Pyrene	ND		ug/kg	110	18.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-09
 Client ID: PB-886-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:45
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 14:26
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	190	23.	1
Benzo(a)anthracene	ND		ug/kg	120	22.	1
Benzo(a)pyrene	ND		ug/kg	150	47.	1
Benzo(b)fluoranthene	ND		ug/kg	120	32.	1
Chrysene	ND		ug/kg	120	20.	1
Anthracene	ND		ug/kg	120	38.	1
Benzo(ghi)perylene	ND		ug/kg	150	23.	1
Fluorene	44	J	ug/kg	190	19.	1
Phenanthrene	120		ug/kg	120	23.	1
Pyrene	ND		ug/kg	120	19.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	79		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-10
 Client ID: PB-886-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:20
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 14:49
 Analyst: JG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	140	J	ug/kg	180	22.	1
Benzo(a)anthracene	22	J	ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	150	44.	1
Benzo(b)fluoranthene	36	J	ug/kg	110	31.	1
Chrysene	93	J	ug/kg	110	19.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	27	J	ug/kg	150	21.	1
Fluorene	30	J	ug/kg	180	18.	1
Phenanthrene	120		ug/kg	110	22.	1
Pyrene	110		ug/kg	110	18.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	56		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-11
 Client ID: PB-886-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 15:13
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	200	25.	1
Benzo(a)anthracene	ND		ug/kg	120	23.	1
Benzo(a)pyrene	ND		ug/kg	160	49.	1
Benzo(b)fluoranthene	ND		ug/kg	120	34.	1
Chrysene	ND		ug/kg	120	21.	1
Anthracene	ND		ug/kg	120	39.	1
Benzo(ghi)perylene	ND		ug/kg	160	24.	1
Fluorene	ND		ug/kg	200	20.	1
Phenanthrene	ND		ug/kg	120	25.	1
Pyrene	ND		ug/kg	120	20.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	96		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-12
 Client ID: PB-886-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:40
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 15:36
 Analyst: JG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	22	J	ug/kg	180	22.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	110	30.	1
Chrysene	31	J	ug/kg	110	18.	1
Anthracene	34	J	ug/kg	110	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	54	J	ug/kg	180	17.	1
Phenanthrene	120		ug/kg	110	22.	1
Pyrene	45	J	ug/kg	110	18.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13
 Client ID: PB-886-27-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:50
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/11/21 16:00
 Analyst: JG
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 10/09/21 01:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	170	21.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	42.	1
Benzo(b)fluoranthene	ND		ug/kg	100	29.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	20.	1
Fluorene	ND		ug/kg	170	17.	1
Phenanthrene	ND		ug/kg	100	21.	1
Pyrene	ND		ug/kg	100	17.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	84		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-14
 Client ID: DUP-21
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 10/12/21 12:50
 Analyst: SZ
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 10/10/21 02:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		ug/kg	180	22.	1
Benzo(a)anthracene	ND		ug/kg	100	20.	1
Benzo(a)pyrene	ND		ug/kg	140	43.	1
Benzo(b)fluoranthene	ND		ug/kg	100	30.	1
Chrysene	ND		ug/kg	100	18.	1
Anthracene	ND		ug/kg	100	34.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	17.	1
Phenanthrene	ND		ug/kg	100	21.	1
Pyrene	ND		ug/kg	100	18.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	64		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-15
 Client ID: FB-211007
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 12:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 10/13/21 20:09
 Analyst: ALS

Extraction Method: EPA 3510C
 Extraction Date: 10/12/21 11:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.05	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.02	J	ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	0.02	J	ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	41		10-120
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	70		15-120
2,4,6-Tribromophenol	62		10-120
4-Terphenyl-d14	75		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 10/11/21 12:24
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 10/09/21 01:43

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-13 Batch: WG1556449-1					
Naphthalene	ND		ug/kg	160	20.
Benzo(a)anthracene	ND		ug/kg	97	18.
Benzo(a)pyrene	ND		ug/kg	130	39.
Benzo(b)fluoranthene	ND		ug/kg	97	27.
Chrysene	ND		ug/kg	97	17.
Anthracene	ND		ug/kg	97	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	97	20.
Pyrene	ND		ug/kg	97	16.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	96		25-120
Phenol-d6	93		10-120
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	89		30-120
2,4,6-Tribromophenol	92		10-136
4-Terphenyl-d14	90		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 10/12/21 04:51
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 10/10/21 02:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 14 Batch: WG1556713-1					
Naphthalene	ND		ug/kg	160	20.
Benzo(a)anthracene	ND		ug/kg	99	18.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	99	28.
Chrysene	ND		ug/kg	99	17.
Anthracene	ND		ug/kg	99	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	99	20.
Pyrene	ND		ug/kg	99	16.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	91		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 10/13/21 18:35
Analyst: ALS

Extraction Method: EPA 3510C
Extraction Date: 10/12/21 11:07

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 15 Batch: WG1557513-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	0.02	J	ug/l	0.10	0.02
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02
Chrysene	0.02	J	ug/l	0.10	0.01
Benzo(b)fluoranthene	0.05	J	ug/l	0.05	0.01
Benzo(a)pyrene	0.03	J	ug/l	0.10	0.02
Benzo(ghi)perylene	0.04	J	ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	48		21-120
Phenol-d6	39		10-120
Nitrobenzene-d5	50		23-120
2-Fluorobiphenyl	65		15-120
2,4,6-Tribromophenol	63		10-120
4-Terphenyl-d14	74		41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-13 Batch: WG1556449-2 WG1556449-3								
Naphthalene	82		94		40-140	14		50
Benzo(a)anthracene	93		98		40-140	5		50
Benzo(a)pyrene	98		107		40-140	9		50
Benzo(b)fluoranthene	94		104		40-140	10		50
Chrysene	88		95		40-140	8		50
Anthracene	87		92		40-140	6		50
Benzo(ghi)perylene	93		99		40-140	6		50
Fluorene	92		96		40-140	4		50
Phenanthrene	86		91		40-140	6		50
Pyrene	90		95		35-142	5		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	91		103		25-120
Phenol-d6	90		100		10-120
Nitrobenzene-d5	89		99		23-120
2-Fluorobiphenyl	88		99		30-120
2,4,6-Tribromophenol	96		99		10-136
4-Terphenyl-d14	87		92		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 14 Batch: WG1556713-2 WG1556713-3								
Naphthalene	81		82		40-140	1		50
Benzo(a)anthracene	85		85		40-140	0		50
Benzo(a)pyrene	88		88		40-140	0		50
Benzo(b)fluoranthene	83		84		40-140	1		50
Chrysene	82		82		40-140	0		50
Anthracene	85		84		40-140	1		50
Benzo(ghi)perylene	83		85		40-140	2		50
Fluorene	84		86		40-140	2		50
Phenanthrene	83		82		40-140	1		50
Pyrene	85		86		35-142	1		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	80		82		23-120
2-Fluorobiphenyl	82		82		30-120
4-Terphenyl-d14	94		94		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 15 Batch: WG1557513-2 WG1557513-3								
Naphthalene	63		57		40-140	10		40
Fluorene	73		69		40-140	6		40
Phenanthrene	68		67		40-140	1		40
Anthracene	71		67		40-140	6		40
Pyrene	74		75		26-127	1		40
Benzo(a)anthracene	75		78		40-140	4		40
Chrysene	67		70		40-140	4		40
Benzo(b)fluoranthene	75		86		40-140	14		40
Benzo(a)pyrene	75		81		40-140	8		40
Benzo(ghi)perylene	66		74		40-140	11		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	54		47		21-120
Phenol-d6	44		41		10-120
Nitrobenzene-d5	55		49		23-120
2-Fluorobiphenyl	69		63		15-120
2,4,6-Tribromophenol	65		56		10-120
4-Terphenyl-d14	73		73		41-149

METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-01

Date Collected: 10/07/21 08:40

Client ID: PB-886-01-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.35		mg/kg	4.55	0.244	2	10/08/21 21:25	10/13/21 17:32	EPA 3050B	1,6010D	JC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-02

Date Collected: 10/07/21 08:50

Client ID: PB-886-02-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.80		mg/kg	4.64	0.248	2	10/08/21 21:25	10/13/21 17:24	EPA 3050B	1,6010D	JC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-03

Date Collected: 10/07/21 09:20

Client ID: PB-886-03-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.50		mg/kg	4.81	0.258	2	10/08/21 21:25	10/13/21 17:28	EPA 3050B	1,6010D	JC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-04

Date Collected: 10/07/21 09:40

Client ID: PB-886-04-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.09		mg/kg	4.65	0.249	2	10/08/21 21:25	10/13/21 18:02	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-05

Date Collected: 10/07/21 10:10

Client ID: PB-886-05-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.94	J	mg/kg	4.12	0.221	2	10/08/21 21:25	10/13/21 18:07	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-06

Date Collected: 10/07/21 11:10

Client ID: PB-886-08-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	81.9		mg/kg	2.10	0.112	1	10/08/21 21:25	10/12/21 23:25	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-07

Date Collected: 10/07/21 11:30

Client ID: PB-886-09-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.76	J	mg/kg	2.10	0.113	1	10/08/21 21:25	10/13/21 00:00	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-08

Date Collected: 10/07/21 11:35

Client ID: PB-886-11-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.7		mg/kg	2.14	0.115	1	10/08/21 21:25	10/13/21 00:05	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-09

Date Collected: 10/07/21 11:45

Client ID: PB-886-12-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.66		mg/kg	4.58	0.245	2	10/08/21 21:25	10/13/21 18:11	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-10

Date Collected: 10/07/21 13:20

Client ID: PB-886-18-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.92	J	mg/kg	2.10	0.112	1	10/08/21 21:25	10/13/21 00:15	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-11

Date Collected: 10/07/21 13:30

Client ID: PB-886-24-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.51		mg/kg	2.35	0.126	1	10/08/21 21:25	10/13/21 00:19	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-12

Date Collected: 10/07/21 13:40

Client ID: PB-886-26-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.15		mg/kg	2.08	0.111	1	10/08/21 21:25	10/13/21 00:24	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13

Date Collected: 10/07/21 13:50

Client ID: PB-886-27-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.28		mg/kg	2.04	0.109	1	10/08/21 21:25	10/13/21 00:28	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-14

Date Collected: 10/07/21 00:00

Client ID: DUP-21

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.87	J	mg/kg	2.09	0.112	1	10/08/21 21:25	10/13/21 00:33	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-15

Date Collected: 10/07/21 12:00

Client ID: FB-211007

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	10/12/21 06:28	10/14/21 21:40	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 15 Batch: WG1555973-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	10/12/21 06:28	10/14/21 20:35	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-14 Batch: WG1556309-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	10/08/21 21:25	10/12/21 23:07	1,6010D	DL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 15 Batch: WG1555973-2								
Lead, Total	97		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-14 Batch: WG1556309-2 SRM Lot Number: D109-540								
Lead, Total	82		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 15 QC Batch ID: WG1555973-3 QC Sample: L2154461-01 Client ID: MS Sample												
Lead, Total	ND	530	516.4	97		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1556309-3 QC Sample: L2154810-01 Client ID: PB-886-01-SS01												
Lead, Total	6.35	48	42.0	74	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2154810

Report Date: 10/21/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1556309-4 QC Sample: L2154810-01 Client ID: PB-886-01-SS01						
Lead, Total	6.35	6.39	mg/kg	1		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-01

Date Collected: 10/07/21 08:40

Client ID: PB-886-01-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.7		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-02

Date Collected: 10/07/21 08:50

Client ID: PB-886-02-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-03
Client ID: PB-886-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 09:20
Date Received: 10/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-04

Date Collected: 10/07/21 09:40

Client ID: PB-886-04-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**SAMPLE RESULTS**

Lab ID: L2154810-05

Date Collected: 10/07/21 10:10

Client ID: PB-886-05-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-06
 Client ID: PB-886-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:10
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.6		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-07
Client ID: PB-886-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 11:30
Date Received: 10/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.6		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**SAMPLE RESULTS**

Lab ID: L2154810-08

Date Collected: 10/07/21 11:35

Client ID: PB-886-11-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.9		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**SAMPLE RESULTS**

Lab ID: L2154810-09

Date Collected: 10/07/21 11:45

Client ID: PB-886-12-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-10
 Client ID: PB-886-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:20
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-11
 Client ID: PB-886-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:30
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.6		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-12
Client ID: PB-886-26-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 13:40
Date Received: 10/07/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.2		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-13

Date Collected: 10/07/21 13:50

Client ID: PB-886-27-SS01

Date Received: 10/07/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.0		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

SAMPLE RESULTS

Lab ID: L2154810-14
 Client ID: DUP-21
 Sample Location: PHILADELPHIA, PA

Date Collected: 10/07/21 00:00
 Date Received: 10/07/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.1		%	0.100	NA	1	-	10/08/21 10:19	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2154810

Report Date: 10/21/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-14 QC Batch ID: WG1556018-1 QC Sample: L2154810-01 Client ID: PB-886-01-SS01						
Solids, Total	84.7	84.8	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2154810-01A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-01B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-01C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-01D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-01F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-02A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-02B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-02C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-02D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-02F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-03A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-03B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-03C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-03D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-03F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-04A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-04B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-04C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-04D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2154810-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-04F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-05A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-05B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-05C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-05D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-05F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-06A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-06B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-06C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-06D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-06F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-07A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-07B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-07C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-07D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-07F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-08A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-08B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-08C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-08D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-08F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-09A	Vial MeOH preserved	A	NA		3.2	Y	Absent		PA-8260HLW(14)
L2154810-09B	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Serial_No:10212116:50
Lab Number: L2154810
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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2154810-09C	Vial water preserved	A	NA		3.2	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-09D	Plastic 120ml unpreserved	A	NA		3.2	Y	Absent		TS(7)
L2154810-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.2	Y	Absent		PB-TI(180)
L2154810-09F	Glass 120ml/4oz unpreserved	A	NA		3.2	Y	Absent		8270TCL-PAH(14)
L2154810-10A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2154810-10B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-10C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-10D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-10F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)
L2154810-11A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2154810-11B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-11C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-11D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-11F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)
L2154810-12A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2154810-12B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-12C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-12D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-12F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)
L2154810-13A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2154810-13B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260H(14),PA-8260HLW(14)
L2154810-13C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260H(14),PA-8260HLW(14)
L2154810-13D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-13F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2154810-14A	Vial MeOH preserved	B	NA		4.8	Y	Absent		PA-8260HLW(14)
L2154810-14B	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-14C	Vial water preserved	B	NA		4.8	Y	Absent	08-OCT-21 06:24	PA-8260HLW(14)
L2154810-14D	Plastic 120ml unpreserved	B	NA		4.8	Y	Absent		TS(7)
L2154810-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.8	Y	Absent		PB-TI(180)
L2154810-14F	Glass 120ml/4oz unpreserved	B	NA		4.8	Y	Absent		8270TCL-PAH(14)
L2154810-15A	Vial HCl preserved	A	NA		3.2	Y	Absent		PA-8260(14)
L2154810-15B	Vial HCl preserved	A	NA		3.2	Y	Absent		PA-8260(14)
L2154810-15C	Vial HCl preserved	A	NA		3.2	Y	Absent		8011(14)
L2154810-15D	Plastic 250ml HNO3 preserved	A	<2	<2	3.2	Y	Absent		PB-6020T-PPB(180)
L2154810-15E	Amber 250ml unpreserved	A	7	7	3.2	Y	Absent		PA-8270SIM-LVI(7)
L2154810-15F	Amber 250ml unpreserved	A	7	7	3.2	Y	Absent		PA-8270SIM-LVI(7)
L2154810-16A	Vial HCl preserved	A	NA		3.2	Y	Absent		PA-8260(14)
L2154810-16B	Vial HCl preserved	A	NA		3.2	Y	Absent		PA-8260(14)
L2154810-16C	Vial Na2S2O3 preserved	A	NA		3.2	Y	Absent		8011(14)
L2154810-16D	Vial Na2S2O3 preserved	A	NA		3.2	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2154810
Report Date: 10/21/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2154810**Project Number:** 200.00135.005.03**Report Date:** 10/21/21**Data Qualifiers**

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2154810

Project Number: 200.00135.005.03

Report Date: 10/21/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

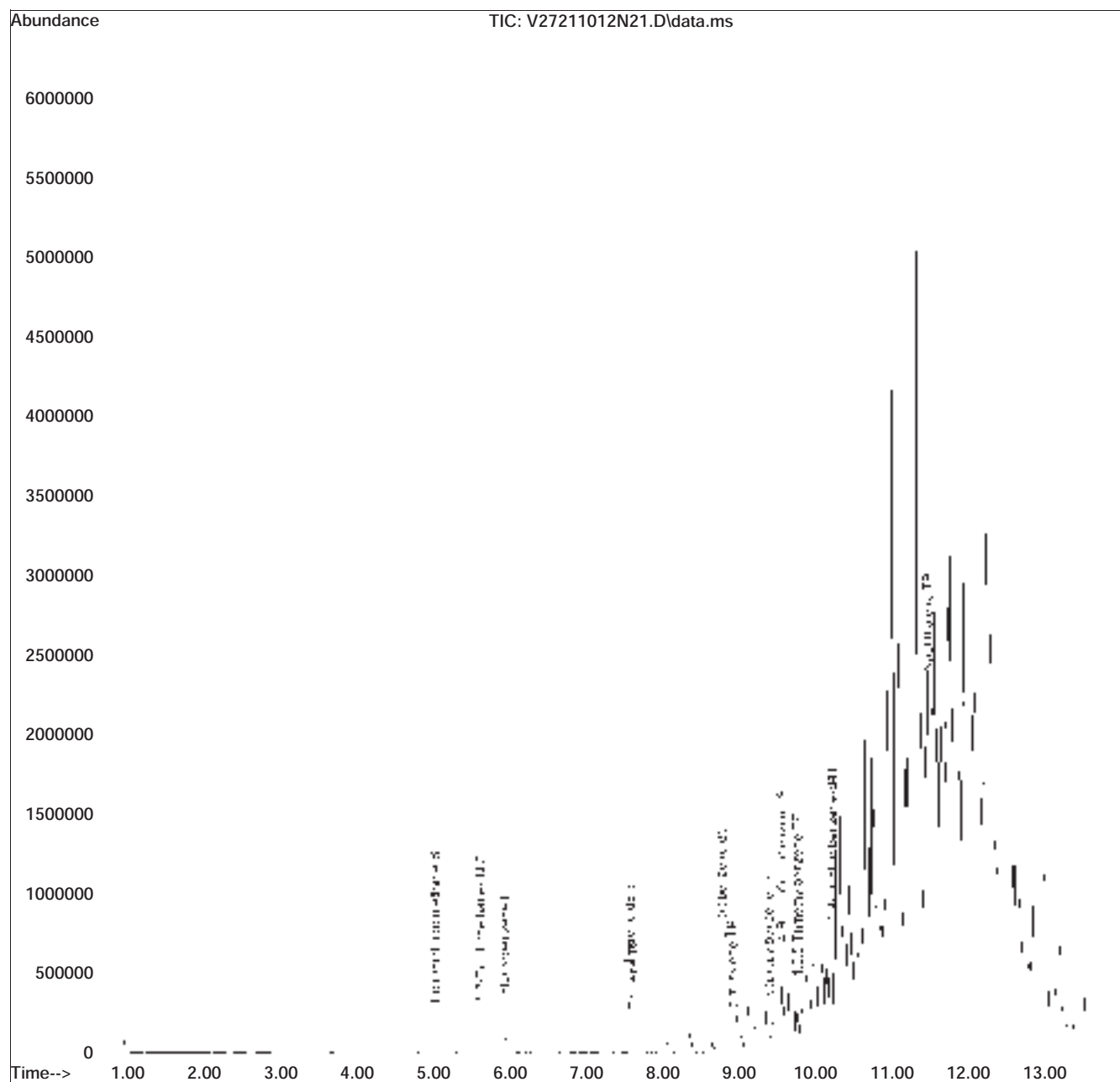
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211012N\
Data File : V27211012N21.D
Acq On : 13 Oct 2021 02:10 am
Operator : VOA127:JC
Sample : L2154810-06,31H,3.71,5,0.100,,A
Misc : WG1558061,ICAL18360
ALS Vial : 21 Sample Multiplier: 1

Quant Time: Oct 13 07:53:25 2021
Quant Method : I:\VOLATILES\VOA127\2021\211012N\V127_211005N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Oct 06 10:48:31 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list12N\V27211012N01.D•

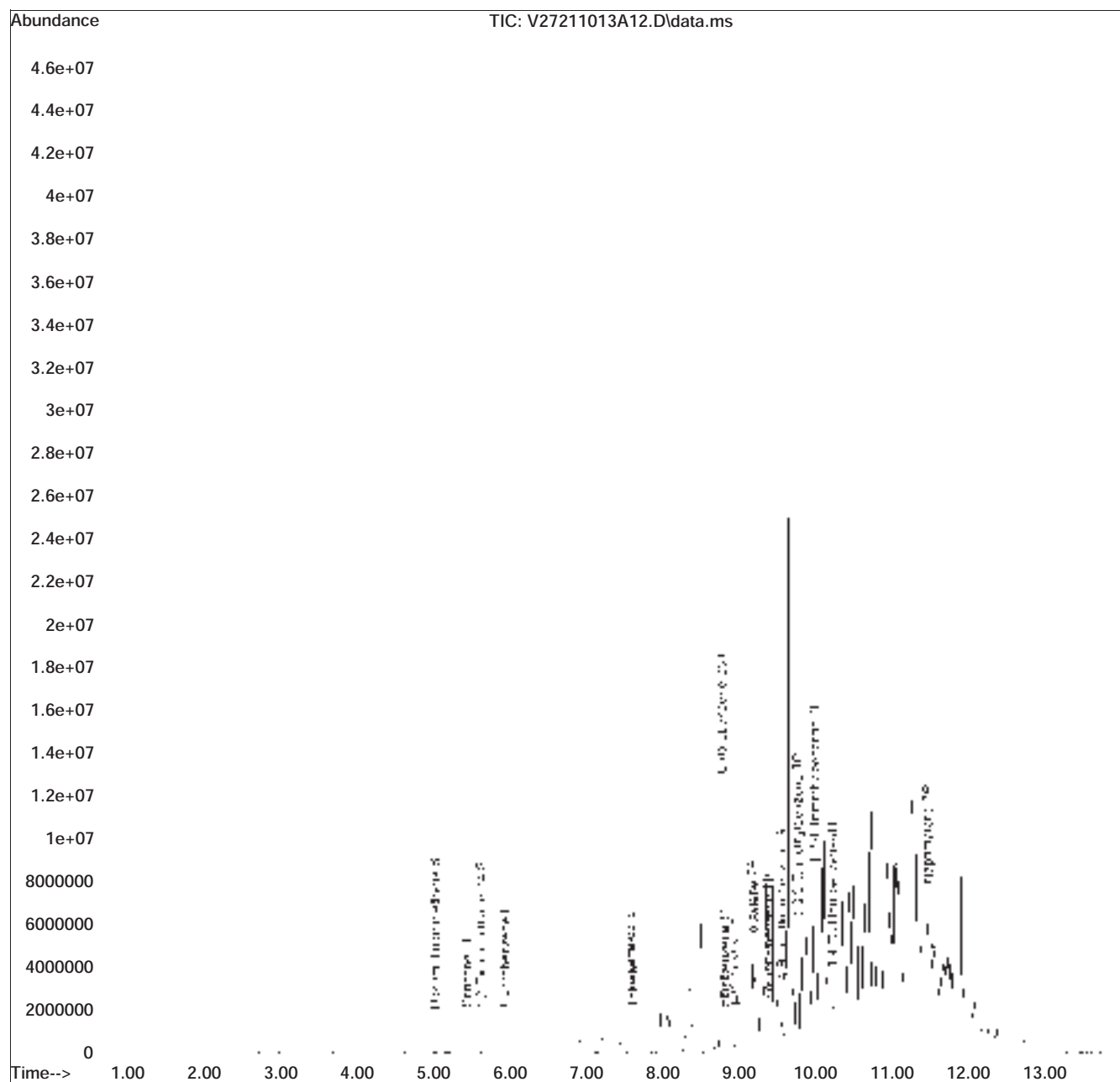


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211013A\
 Data File : V27211013A12.D
 Acq On : 13 Oct 2021 02:48 pm
 Operator : VOA127:AJK
 Sample : L2154810-12,31,4.79,5,,B
 Misc : WG1558495,ICAL18360
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Oct 13 16:21:31 2021
 Quant Method : I:\VOLATILES\VOA127\2021\211013A\V127_211005N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Wed Oct 06 10:48:31 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V27211013A01.D•

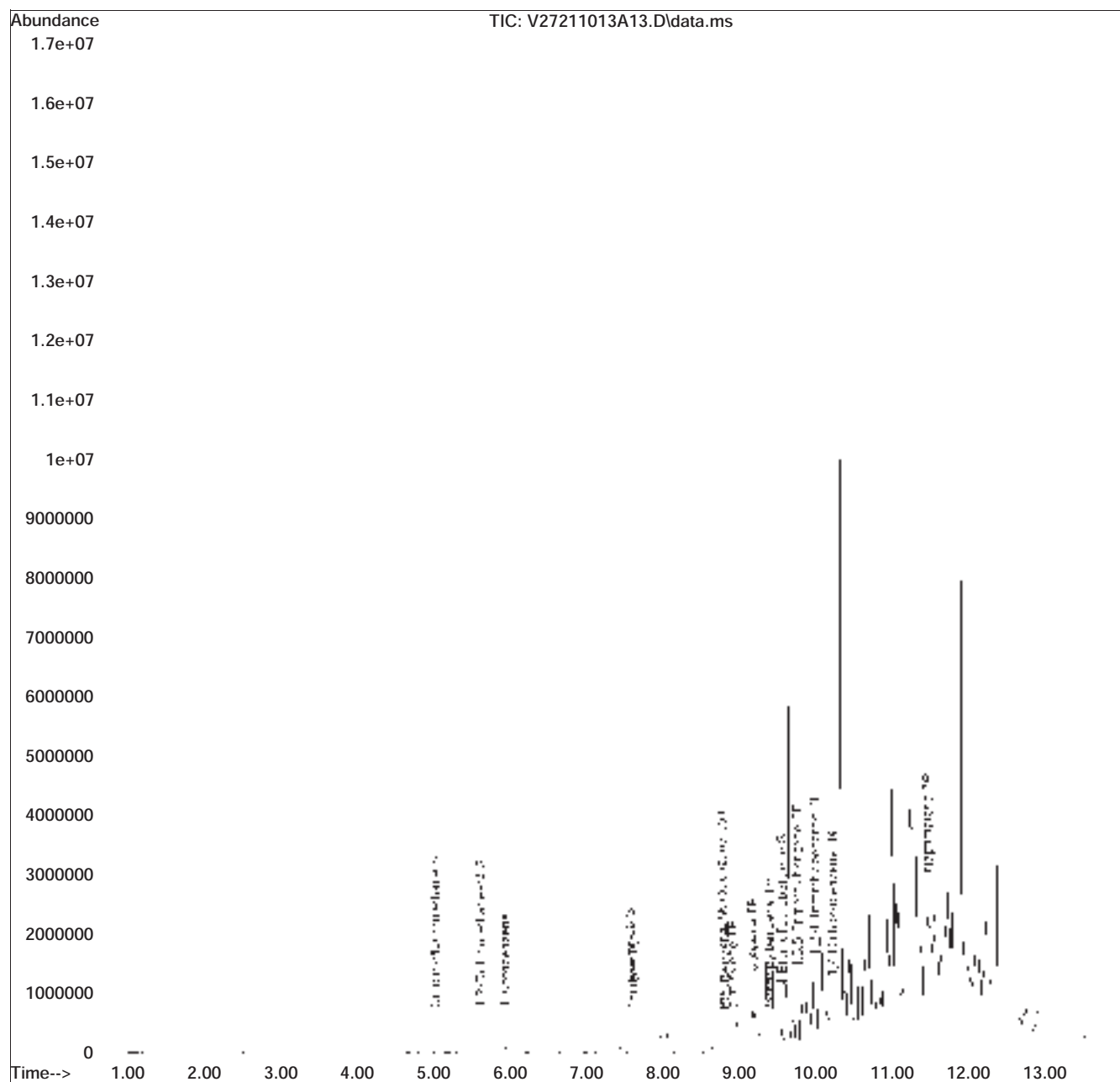


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211013A\
Data File : V27211013A13.D
Acq On : 13 Oct 2021 03:08 pm
Operator : VOA127:AJK
Sample : L2154810-14,31,4.26,5,,B
Misc : WG1558495,ICAL18360
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Oct 13 16:18:54 2021
Quant Method : I:\VOLATILES\VOA127\2021\211013A\V127_211005N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Oct 06 10:48:31 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V27211013A01.D•





ANALYTICAL REPORT

Lab Number:	L2166871
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	12/21/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166871

Report Date: 12/21/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2166871-01	PB-884-22-SS01	SOIL	PHILADELPHIA, PA	12/06/21 10:20	12/06/21
L2166871-02	PB-884-07-SS01	SOIL	PHILADELPHIA, PA	12/06/21 10:45	12/06/21
L2166871-03	PB-884-05-SS01	SOIL	PHILADELPHIA, PA	12/06/21 11:00	12/06/21
L2166871-04	PB-884-06-SS01	SOIL	PHILADELPHIA, PA	12/06/21 11:30	12/06/21
L2166871-05	PB-884-26-SS01	SOIL	PHILADELPHIA, PA	12/06/21 12:00	12/06/21
L2166871-06	PB-884-10-SS01	SOIL	PHILADELPHIA, PA	12/06/21 12:20	12/06/21
L2166871-07	PB-885-01-SS01	SOIL	PHILADELPHIA, PA	12/06/21 13:20	12/06/21
L2166871-08	PB-885-02-SS01	SOIL	PHILADELPHIA, PA	12/06/21 13:30	12/06/21
L2166871-09	PB-885-07-SS01	SOIL	PHILADELPHIA, PA	12/06/21 13:45	12/06/21
L2166871-10	PB-885-16-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:00	12/06/21
L2166871-11	PB-885-03-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:10	12/06/21
L2166871-12	PB-885-08-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:20	12/06/21
L2166871-13	PB-885-09-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:30	12/06/21
L2166871-14	PB-885-10-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:40	12/06/21
L2166871-15	PB-885-11-SS01	SOIL	PHILADELPHIA, PA	12/06/21 14:50	12/06/21
L2166871-16	FB-211206	WATER	PHILADELPHIA, PA	12/06/21 15:00	12/06/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2166871-04: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (152%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2166871-12: The sample has elevated detection limits due to the dilution required by matrix interferences encountered during the concentration of the sample.

Semivolatile Organics by SIM

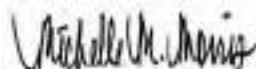
The WG1582162-1 Method Blank, associated with L2166871-16, has a concentration above the reporting limit for Naphthalene and Phenanthrene. Since the associated sample concentrations are either greater than 10x the blank concentration or non-detect to the RL for this target analyte, no corrective action is required. Any results detected below the reporting limit are qualified with a "B".

Total Metals

L2166871-04, -07, -08, and -10: The sample has an elevated detection limit due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 12/21/21

ORGANICS



VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-01
 Client ID: PB-884-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 10:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 19:43
 Analyst: MV
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00027	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-02
 Client ID: PB-884-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 10:45
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 06:45
 Analyst: MV
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	112		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-03
 Client ID: PB-884-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 20:37
 Analyst: MV
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	ND		mg/kg	0.00080	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	ND		mg/kg	0.0016	0.00087	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	ND		mg/kg	0.0016	0.00023	1
p/m-Xylene	ND		mg/kg	0.0032	0.00090	1
o-Xylene	ND		mg/kg	0.0016	0.00047	1
Xylenes, Total	ND		mg/kg	0.0016	0.00047	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0032	0.00054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-04
 Client ID: PB-884-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/16/21 19:44
 Analyst: AJK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00030	J	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	0.00069	J	mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	0.00052	J	mg/kg	0.00090	0.00013	1
p/m-Xylene	0.0012	J	mg/kg	0.0018	0.00051	1
o-Xylene	0.00073	J	mg/kg	0.00090	0.00026	1
Xylenes, Total	0.0019	J	mg/kg	0.00090	0.00026	1
Isopropylbenzene	0.00039	J	mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	0.0042		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.0064		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	152	Q	70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-05
 Client ID: PB-884-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 12:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 21:04
 Analyst: MV
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-06
 Client ID: PB-884-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 12:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 21:31
 Analyst: MV
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	104		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-07
 Client ID: PB-885-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 21:58
 Analyst: MV
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-08
 Client ID: PB-885-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 22:26
 Analyst: MV
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-09
 Client ID: PB-885-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:45
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 22:53
 Analyst: MV
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-10
 Client ID: PB-885-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 23:21
 Analyst: MV
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-11
 Client ID: PB-885-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:10
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/13/21 23:48
 Analyst: MV
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-12
 Client ID: PB-885-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 18:33
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00083	0.00021	1
Toluene	ND		mg/kg	0.00083	0.00045	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00024	1
Ethylbenzene	ND		mg/kg	0.00083	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00083	0.00024	1
Xylenes, Total	ND		mg/kg	0.00083	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00083	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-13
 Client ID: PB-885-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 18:54
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	86		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-14
 Client ID: PB-885-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:40
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 19:14
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0012	0.00033	1
Xylenes, Total	ND		mg/kg	0.0012	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-15
 Client ID: PB-885-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:50
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/15/21 19:35
 Analyst: JC
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	87		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-16
 Client ID: FB-211206
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 15:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/16/21 16:57
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/16/21 13:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-16
 Client ID: FB-211206
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 15:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/16/21 09:31
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	111		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 12/13/21 16:33
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03,05-11 Batch: WG1582904-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/15/21 06:20
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02 Batch: WG1583937-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/15/21 18:13
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 12-15 Batch: WG1584189-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	90		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	85		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 12/16/21 14:43
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 12/16/21 13:32

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 16 Batch: WG1584239-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 12/16/21 08:21
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 16 Batch: WG1584334-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	112		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 12/16/21 11:47
 Analyst: KTD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 04 Batch: WG1584805-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	108		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03,05-11 Batch: WG1582904-3 WG1582904-4								
Methyl tert butyl ether	83		83		66-130	0		30
Benzene	106		102		70-130	4		30
1,2-Dichloroethane	88		88		70-130	0		30
Toluene	110		105		70-130	5		30
1,2-Dibromoethane	87		86		70-130	1		30
Ethylbenzene	111		108		70-130	3		30
p/m-Xylene	114		113		70-130	1		30
o-Xylene	110		110		70-130	0		30
Isopropylbenzene	117		116		70-130	1		30
1,3,5-Trimethylbenzene	113		112		70-130	1		30
1,2,4-Trimethylbenzene	109		108		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	91		91		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	89		90		70-130
Dibromofluoromethane	98		98		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02 Batch: WG1583937-3 WG1583937-4								
Methyl tert butyl ether	98		103		66-130	5		30
Benzene	95		93		70-130	2		30
1,2-Dichloroethane	95		97		70-130	2		30
Toluene	99		97		70-130	2		30
1,2-Dibromoethane	106		112		70-130	6		30
Ethylbenzene	100		98		70-130	2		30
p/m-Xylene	103		100		70-130	3		30
o-Xylene	102		100		70-130	2		30
Isopropylbenzene	104		99		70-130	5		30
1,3,5-Trimethylbenzene	104		100		70-130	4		30
1,2,4-Trimethylbenzene	105		101		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		99		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	95		95		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 12-15 Batch: WG1584189-3 WG1584189-4								
Methyl tert butyl ether	114		117		66-130	3		30
Benzene	103		106		70-130	3		30
1,2-Dichloroethane	86		88		70-130	2		30
Toluene	102		103		70-130	1		30
1,2-Dibromoethane	94		96		70-130	2		30
Ethylbenzene	101		103		70-130	2		30
p/m-Xylene	102		104		70-130	2		30
o-Xylene	99		101		70-130	2		30
Isopropylbenzene	106		107		70-130	1		30
1,3,5-Trimethylbenzene	103		104		70-130	1		30
1,2,4-Trimethylbenzene	102		103		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	87		87		70-130
Toluene-d8	102		100		70-130
4-Bromofluorobenzene	100		101		70-130
Dibromofluoromethane	85		85		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166871

Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 16 Batch: WG1584239-2									
1,2-Dibromoethane	92		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 16 Batch: WG1584334-3 WG1584334-4								
Methyl tert butyl ether	95		100		63-130	5		20
Benzene	100		110		70-130	10		20
1,2-Dichloroethane	110		110		70-130	0		20
Toluene	100		110		70-130	10		20
Ethylbenzene	110		110		70-130	0		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	105		105		70-130	0		20
Isopropylbenzene	100		110		70-130	10		20
1,3,5-Trimethylbenzene	96		100		64-130	4		20
1,2,4-Trimethylbenzene	96		100		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	108		108		70-130
Toluene-d8	104		103		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	104		102		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 04 Batch: WG1584805-3 WG1584805-4								
Methyl tert butyl ether	102		100		66-130	2		30
Benzene	99		97		70-130	2		30
1,2-Dichloroethane	96		94		70-130	2		30
Toluene	100		99		70-130	1		30
1,2-Dibromoethane	104		105		70-130	1		30
Ethylbenzene	102		102		70-130	0		30
p/m-Xylene	106		104		70-130	2		30
o-Xylene	106		106		70-130	0		30
Isopropylbenzene	106		101		70-130	5		30
1,3,5-Trimethylbenzene	108		104		70-130	4		30
1,2,4-Trimethylbenzene	108		103		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	93		92		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	99		95		70-130
Dibromofluoromethane	97		97		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-01
 Client ID: PB-884-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 10:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 18:01
 Analyst: ALS
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	92		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-02
 Client ID: PB-884-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 10:45
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 18:25
 Analyst: ALS
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.043	J	mg/kg	0.10	0.018	1
Benzo(a)anthracene	0.030	J	mg/kg	0.10	0.020	1
Chrysene	0.021	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	91		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-03
 Client ID: PB-884-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 17:24
 Analyst: IM
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	73		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-04
 Client ID: PB-884-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 18:49
 Analyst: ALS
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	0.065	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.039	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.028	J	mg/kg	0.10	0.019	1
Chrysene	0.027	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	75		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-05
 Client ID: PB-884-26-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 12:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 17:48
 Analyst: IM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.025	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-06
 Client ID: PB-884-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 12:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 14:23
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	73		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-07
 Client ID: PB-885-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 02:08
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	84		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-08
 Client ID: PB-885-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 14:46
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.031	J	mg/kg	0.12	0.022	1
Chrysene	0.036	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.075	J	mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.054	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.048	J	mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	60		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	57		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-09
 Client ID: PB-885-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 13:45
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 15:10
 Analyst: SLR
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	77		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-10
 Client ID: PB-885-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 00:08
 Analyst: SLR
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 08:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	80		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-11
 Client ID: PB-885-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:10
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 15:34
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	65		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-12
 Client ID: PB-885-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/20/21 15:57
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.35	0.043	2
Fluorene	ND		mg/kg	0.35	0.034	2
Phenanthrene	ND		mg/kg	0.21	0.043	2
Anthracene	ND		mg/kg	0.21	0.069	2
Pyrene	ND		mg/kg	0.21	0.035	2
Benzo(a)anthracene	ND		mg/kg	0.21	0.040	2
Chrysene	ND		mg/kg	0.21	0.037	2
Benzo(b)fluoranthene	ND		mg/kg	0.21	0.060	2
Benzo(a)pyrene	ND		mg/kg	0.28	0.086	2
Benzo(ghi)perylene	ND		mg/kg	0.28	0.042	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	51		23-120
2-Fluorobiphenyl	50		30-120
4-Terphenyl-d14	45		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-13
 Client ID: PB-885-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:30
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/15/21 23:44
 Analyst: SLR
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-14
 Client ID: PB-885-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:40
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 02:56
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-15
 Client ID: PB-885-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:50
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/16/21 00:32
 Analyst: SLR
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.041	1
Pyrene	ND		mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.024	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.051	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-16
 Client ID: FB-211206
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 15:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/13/21 12:29
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 12/11/21 21:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	82		15-120
4-Terphenyl-d14	104		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 12/14/21 17:24
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 12/11/21 21:11

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 16 Batch: WG1582162-1					
Naphthalene	0.12		ug/l	0.10	0.05
Fluorene	0.01	J	ug/l	0.10	0.01
Phenanthrene	0.10		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	73		15-120
4-Terphenyl-d14	72		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 12/15/21 07:59
Analyst: ALS

Extraction Method: EPA 3546
Extraction Date: 12/14/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-10 Batch: WG1582958-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	95		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 12/15/21 23:18
Analyst: SLR

Extraction Method: EPA 3546
Extraction Date: 12/14/21 09:53

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 11-15 Batch: WG1583017-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	95		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166871

Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 16 Batch: WG1582162-2 WG1582162-3								
Naphthalene	78		87		40-140	11		40
Fluorene	93		95		40-140	2		40
Phenanthrene	91		92		40-140	1		40
Anthracene	96		97		40-140	1		40
Pyrene	105		104		26-127	1		40
Benzo(a)anthracene	99		97		40-140	2		40
Chrysene	92		92		40-140	0		40
Benzo(b)fluoranthene	109		109		40-140	0		40
Benzo(a)pyrene	105		103		40-140	2		40
Benzo(ghi)perylene	90		88		40-140	2		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	68		77		23-120
2-Fluorobiphenyl	88		97		15-120
4-Terphenyl-d14	114		112		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-10 Batch: WG1582958-2 WG1582958-3								
Naphthalene	80		79		40-140	1		50
Fluorene	88		88		40-140	0		50
Phenanthrene	83		84		40-140	1		50
Anthracene	85		84		40-140	1		50
Pyrene	86		86		35-142	0		50
Benzo(a)anthracene	87		86		40-140	1		50
Chrysene	81		81		40-140	0		50
Benzo(b)fluoranthene	82		81		40-140	1		50
Benzo(a)pyrene	74		74		40-140	0		50
Benzo(ghi)perylene	83		81		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	97		98		23-120
2-Fluorobiphenyl	83		84		30-120
4-Terphenyl-d14	88		86		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166871

Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 11-15 Batch: WG1583017-2 WG1583017-3								
Naphthalene	84		75		40-140	11		50
Fluorene	88		80		40-140	10		50
Phenanthrene	87		78		40-140	11		50
Anthracene	86		79		40-140	8		50
Pyrene	86		76		35-142	12		50
Benzo(a)anthracene	93		82		40-140	13		50
Chrysene	89		80		40-140	11		50
Benzo(b)fluoranthene	95		88		40-140	8		50
Benzo(a)pyrene	90		81		40-140	11		50
Benzo(ghi)perylene	102		88		40-140	15		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		71		23-120
2-Fluorobiphenyl	90		78		30-120
4-Terphenyl-d14	91		81		18-120

METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-01

Date Collected: 12/06/21 10:20

Client ID: PB-884-22-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.77		mg/kg	2.16	0.116	1	12/16/21 07:20	12/19/21 15:28	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-02

Date Collected: 12/06/21 10:45

Client ID: PB-884-07-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.61		mg/kg	2.04	0.110	1	12/16/21 07:20	12/19/21 15:33	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-03

Date Collected: 12/06/21 11:00

Client ID: PB-884-05-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.38		mg/kg	2.03	0.109	1	12/16/21 07:20	12/19/21 15:38	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-04

Date Collected: 12/06/21 11:30

Client ID: PB-884-06-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	89.0		mg/kg	9.96	0.534	5	12/16/21 07:20	12/19/21 17:55	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-05

Date Collected: 12/06/21 12:00

Client ID: PB-884-26-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	26.5		mg/kg	2.31	0.124	1	12/16/21 07:20	12/19/21 15:47	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-06
 Client ID: PB-884-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 12:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.58		mg/kg	1.99	0.107	1	12/16/21 07:20	12/19/21 15:52	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-07

Date Collected: 12/06/21 13:20

Client ID: PB-885-01-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	150		mg/kg	11.1	0.597	5	12/16/21 07:20	12/19/21 17:59	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-08

Date Collected: 12/06/21 13:30

Client ID: PB-885-02-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	43.9		mg/kg	11.3	0.604	5	12/16/21 07:20	12/19/21 18:04	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-09

Date Collected: 12/06/21 13:45

Client ID: PB-885-07-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	17.4		mg/kg	2.15	0.115	1	12/16/21 07:20	12/19/21 16:07	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-10

Date Collected: 12/06/21 14:00

Client ID: PB-885-16-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.76	J	mg/kg	11.4	0.613	5	12/16/21 07:20	12/19/21 18:21	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-11

Date Collected: 12/06/21 14:10

Client ID: PB-885-03-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.68		mg/kg	2.05	0.110	1	12/16/21 07:20	12/19/21 17:21	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-12

Date Collected: 12/06/21 14:20

Client ID: PB-885-08-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.07		mg/kg	2.01	0.108	1	12/16/21 07:20	12/19/21 17:26	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-13

Date Collected: 12/06/21 14:30

Client ID: PB-885-09-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.61		mg/kg	2.39	0.128	1	12/16/21 07:20	12/19/21 17:31	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-14

Date Collected: 12/06/21 14:40

Client ID: PB-885-10-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.04		mg/kg	2.03	0.109	1	12/16/21 07:20	12/19/21 17:35	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-15

Date Collected: 12/06/21 14:50

Client ID: PB-885-11-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.43		mg/kg	2.50	0.134	1	12/16/21 07:20	12/19/21 17:50	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-16

Date Collected: 12/06/21 15:00

Client ID: FB-211206

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/14/21 05:12	12/17/21 02:24	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 16 Batch: WG1582832-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	12/14/21 05:12	12/16/21 23:54	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-15 Batch: WG1583249-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	12/16/21 07:20	12/19/21 14:27	1,6010D	DL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 Batch: WG1582832-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-15 Batch: WG1583249-2 SRM Lot Number: D113-540								
Lead, Total	85		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 QC Batch ID: WG1582832-3 WG1582832-4 QC Sample: L2167147-05 Client ID: MS Sample												
Lead, Total	1.973	530	492.8	93		482.8	91		75-125	2		20
Total Metals - Mansfield Lab Associated sample(s): 01-15 QC Batch ID: WG1583249-3 QC Sample: L2166856-01 Client ID: MS Sample												
Lead, Total	39.1	182	173	74	Q	-	-		75-125	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166871

Report Date: 12/21/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-15 QC Batch ID: WG1583249-4 QC Sample: L2166856-01 Client ID: DUP Sample						
Lead, Total	39.1	41.2	mg/kg	5		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-01
 Client ID: PB-884-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 10:20
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.1		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-02

Date Collected: 12/06/21 10:45

Client ID: PB-884-07-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-03
 Client ID: PB-884-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 11:00
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**SAMPLE RESULTS**

Lab ID: L2166871-04

Date Collected: 12/06/21 11:30

Client ID: PB-884-06-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.5		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**SAMPLE RESULTS**

Lab ID: L2166871-05

Date Collected: 12/06/21 12:00

Client ID: PB-884-26-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-06

Date Collected: 12/06/21 12:20

Client ID: PB-884-10-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.4		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-07

Date Collected: 12/06/21 13:20

Client ID: PB-885-01-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**SAMPLE RESULTS**

Lab ID: L2166871-08

Date Collected: 12/06/21 13:30

Client ID: PB-885-02-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-09

Date Collected: 12/06/21 13:45

Client ID: PB-885-07-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.1		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-10

Date Collected: 12/06/21 14:00

Client ID: PB-885-16-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**SAMPLE RESULTS**

Lab ID: L2166871-11

Date Collected: 12/06/21 14:10

Client ID: PB-885-03-SS01

Date Received: 12/06/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.9		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-12
Client ID: PB-885-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:20
Date Received: 12/06/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.7		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-13
Client ID: PB-885-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:30
Date Received: 12/06/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.8		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-14
 Client ID: PB-885-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:40
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.1		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

SAMPLE RESULTS

Lab ID: L2166871-15
 Client ID: PB-885-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/06/21 14:50
 Date Received: 12/06/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.7		%	0.100	NA	1	-	12/08/21 08:09	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2166871

Report Date: 12/21/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-15 QC Batch ID: WG1580494-1 QC Sample: L2166871-01 Client ID: PB-884-22-SS01						
Solids, Total	91.1	89.4	%	2		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166871-01A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-01B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-01C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-01D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-01F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-02A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-02B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-02C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-02D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-02F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-03A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-03B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-03C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-03D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-03F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-04A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-04B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-04C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166871-04D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-04F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-05A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-05B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-05C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-05D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-05F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-06A	Vial MeOH preserved	A	NA		2.8	Y	Absent		PA-8260HLW(14)
L2166871-06B	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-06C	Vial water preserved	A	NA		2.8	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-06D	Plastic 2oz unpreserved for TS	A	NA		2.8	Y	Absent		TS(7)
L2166871-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.8	Y	Absent		PB-TI(180)
L2166871-06F	Glass 120ml/4oz unpreserved	A	NA		2.8	Y	Absent		PA-PAH(14)
L2166871-07A	Vial MeOH preserved	C	NA		2.9	Y	Absent		PA-8260HLW(14)
L2166871-07B	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-07C	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-07D	Plastic 2oz unpreserved for TS	C	NA		2.9	Y	Absent		TS(7)
L2166871-07E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.9	Y	Absent		PB-TI(180)
L2166871-07F	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PA-PAH(14)
L2166871-08A	Vial MeOH preserved	C	NA		2.9	Y	Absent		PA-8260HLW(14)
L2166871-08B	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-08C	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-08D	Plastic 2oz unpreserved for TS	C	NA		2.9	Y	Absent		TS(7)
L2166871-08E	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PB-TI(180)
L2166871-08F	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PA-PAH(14)
L2166871-09A	Vial MeOH preserved	C	NA		2.9	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166871-09B	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-09C	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-09D	Plastic 2oz unpreserved for TS	C	NA		2.9	Y	Absent		TS(7)
L2166871-09E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.9	Y	Absent		PB-TI(180)
L2166871-09F	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PA-PAH(14)
L2166871-10A	Vial MeOH preserved	C	NA		2.9	Y	Absent		PA-8260HLW(14)
L2166871-10B	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-10C	Vial water preserved	C	NA		2.9	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-10D	Plastic 2oz unpreserved for TS	C	NA		2.9	Y	Absent		TS(7)
L2166871-10E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.9	Y	Absent		PB-TI(180)
L2166871-10F	Glass 120ml/4oz unpreserved	C	NA		2.9	Y	Absent		PA-PAH(14)
L2166871-11A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-11B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-11C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-11D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-11F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-12A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-12B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-12C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-12D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-12F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-13A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-13B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-13C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-13D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2166871**Project Number:** 200.00135.005.03**Report Date:** 12/21/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2166871-13F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-14A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-14B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-14C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-14D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-14F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-15A	Vial MeOH preserved	B	NA		2.7	Y	Absent		PA-8260HLW(14)
L2166871-15B	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-15C	Vial water preserved	B	NA		2.7	Y	Absent	07-DEC-21 11:33	PA-8260HLW(14)
L2166871-15D	Plastic 2oz unpreserved for TS	B	NA		2.7	Y	Absent		TS(7)
L2166871-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		2.7	Y	Absent		PB-TI(180)
L2166871-15F	Glass 120ml/4oz unpreserved	B	NA		2.7	Y	Absent		PA-PAH(14)
L2166871-16A	Vial HCl preserved	C	NA		2.9	Y	Absent		PA-8260(14)
L2166871-16B	Vial HCl preserved	C	NA		2.9	Y	Absent		PA-8260(14)
L2166871-16C	Vial HCl preserved	C	NA		2.9	Y	Absent		8011(14)
L2166871-16D	Plastic 60ml unpreserved	C	7	7	2.9	Y	Absent		ARCHIVE()
L2166871-16F	Plastic 250ml HNO3 preserved	C	<2	<2	2.9	Y	Absent		PB-6020T-PPB(180)
L2166871-16G	Amber 250ml unpreserved	C	7	7	2.9	Y	Absent		PA-PAHSIM-LVI(7)
L2166871-16H	Amber 250ml unpreserved	C	7	7	2.9	Y	Absent		PA-PAHSIM-LVI(7)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2166871
Report Date: 12/21/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2166871

Project Number: 200.00135.005.03

Report Date: 12/21/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 2



Westborough, MA
 TEL: 508-898-9220
 FAX: 508-898-9193

Mansfield, MA
 TEL: 508-822-9300
 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC
 Address: 2127 Hamilton Avenue
 Trenton, NJ 08619
 Phone: 215-901-4974

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Fax: Standard Rush (ONLY IF PRE-APPROVED)

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 12/6/01

ALPHA Job #: 12106871

Report Information Data Deliverables Billing Information

FAX EMAIL Same as Client info PO #: 3894
 ADEx Add'l Deliverables

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist	SAMPLE HANDLING Filtration <input type="checkbox"/> Done <input checked="" type="checkbox"/> Not Needed Preservation <input type="checkbox"/> Lab to do <input type="checkbox"/> Lab to do (Please specify below)	TOTAL # BOTTLES
		Date	Time															
G6871-01	PB-881-22-5501	12/6	1020	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-02	PB-881-07-5501		1045	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-03	PB-884-05-5501		1100	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-04	PB-884-06-5501		1130	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-05	PB-884-26-5501		1200	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-06	PB-884-10-5501		1220	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-07	PB-885-01-5501		1320	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-08	PB-885-02-5501		1330	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-09	PB-885-07-5501		1345	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6
-10	PB-885-16-5501		1406	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		6

Container Type	G	G	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>William Schmidt</i>	12/6/01 10:25	<i>Paul Mazzella</i>	12/6/01 10:25
<i>Paul Mazzella</i>	12/6/01 12:30	<i>Paul Mazzella</i>	12/6/01 12:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO: 01-02(N)6
 (rev. 8-JAN-02)

Paul Mazzella 12/7/01 0132

CHAIN OF CUSTODY

PAGE 12 OF 22



Westborough, MA
 TEL: 508-898-9220
 FAX: 508-898-9193

Mansfield, MA
 TEL: 508-822-9300
 FAX: 508-822-3285

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Date Rec'd in Lab: 12/7/21

ALPHA Job #: 12164821

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylens Glycol	VOC portion of PADEP Shortlist
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Lab to do
 Preservation
 Lab to do
 (Please specify below)

Sample Specific Comments

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
66871-11	PB-885-03-SS01	12/6	1410	S	TS
-12	PB-885-08-SS01		1420	S	TS
-13	PB-885-09-SS01		1430	S	TS
-14	PB-885-10-SS01		1440	S	TS
-15	PB-885-11-SS01		1450	S	TS
-16	FB-211206		1400	W	TS

Container Type	G	G	G	-	-	-	-	-	-	-
Preservative	F	A	A	-	-	-	-	-	-	-

Relinquished By: *[Signature]* Date/Time: 12/6/21 16:50
 Received By: *[Signature]* Date/Time: 12/6/21 16:25
Paul Mazzella 12/6/21 17:30
Paul Mazzella 12/6/21 20:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

FORM NO. 01-01(14)
 Rev. 9-2009

Paul Mazzella 12/7/21 03:27
12/6-2001
12/7/21 01:32

PADEP Short List Analytical List:

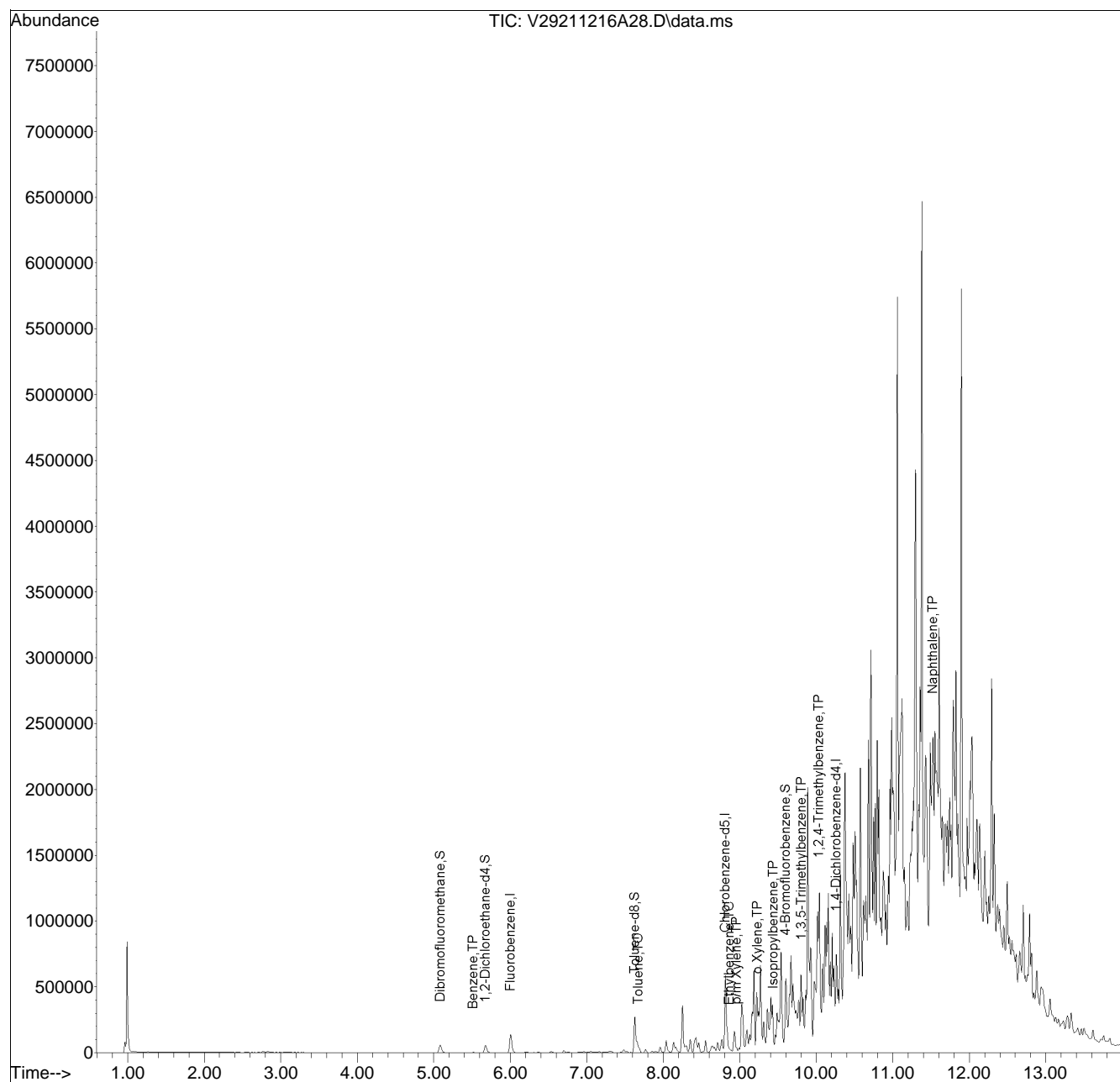
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
6. Waste Oil – benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, lead

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2021\211216A\
 Data File : V29211216A28.D
 Acq On : 16 Dec 2021 07:44 pm
 Operator : VOA129:AJK
 Sample : L2166871-04,31,5.79,5,,B
 Misc : WG1584805,ICAL18564
 ALS Vial : 28 Sample Multiplier: 1

Quant Time: Dec 17 09:57:51 2021
 Quant Method : I:\VOLATILES\VOA129\2021\211216A\V129_211213N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Tue Dec 14 10:56:36 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list16A\V29211216A02.D•





ANALYTICAL REPORT

Lab Number:	L2167657
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.005.03
Report Date:	12/28/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2167657-01	PB-191-01-SS01	SOIL	PHILADELPHIA, PA	12/09/21 09:20	12/09/21
L2167657-02	PB-191-02-SS01	SOIL	PHILADELPHIA, PA	12/09/21 09:40	12/09/21
L2167657-03	PB-191-04-SS01	SOIL	PHILADELPHIA, PA	12/09/21 09:55	12/09/21
L2167657-04	PB-191-05-SS01	SOIL	PHILADELPHIA, PA	12/09/21 10:20	12/09/21
L2167657-05	PB-191-06-SS01	SOIL	PHILADELPHIA, PA	12/09/21 10:30	12/09/21
L2167657-06	PB-191-07-SS01	SOIL	PHILADELPHIA, PA	12/09/21 10:45	12/09/21
L2167657-07	PB-191-08-SS01	SOIL	PHILADELPHIA, PA	12/09/21 10:55	12/09/21
L2167657-08	DUP-25	SOIL	PHILADELPHIA, PA	12/09/21 00:00	12/09/21
L2167657-09	FB-211209	WATER	PHILADELPHIA, PA	12/09/21 11:00	12/09/21
L2167657-10	TB-211209	WATER	PHILADELPHIA, PA	12/09/21 00:00	12/09/21

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2167657-02: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (134%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167657-03: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (163%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167657-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (146%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167657-06: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2167657-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (136%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2167657-05D: The sample has elevated detection limits due to the dilution required by the sample matrix.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 12/28/21

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-01
 Client ID: PB-191-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:20
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 10:37
 Analyst: MV
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00073	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00079	1
1,2-Dibromoethane	ND		mg/kg	0.00073	0.00043	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00081	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-02
 Client ID: PB-191-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:40
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 11:28
 Analyst: MV
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0049	0.00049	1
Benzene	0.0094		mg/kg	0.0012	0.00040	1
1,2-Dichloroethane	ND		mg/kg	0.0024	0.00063	1
Toluene	0.0015	J	mg/kg	0.0024	0.0013	1
1,2-Dibromoethane	ND		mg/kg	0.0012	0.00072	1
Ethylbenzene	0.0012	J	mg/kg	0.0024	0.00034	1
p/m-Xylene	0.0028	J	mg/kg	0.0049	0.0014	1
o-Xylene	0.0019	J	mg/kg	0.0024	0.00071	1
Xylenes, Total	0.0047	J	mg/kg	0.0024	0.00071	1
Isopropylbenzene	0.0022	J	mg/kg	0.0024	0.00027	1
1,3,5-Trimethylbenzene	0.00054	J	mg/kg	0.0049	0.00047	1
1,2,4-Trimethylbenzene	0.0013	J	mg/kg	0.0049	0.00082	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	125		70-130
4-Bromofluorobenzene	134	Q	70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-03
 Client ID: PB-191-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 19:07
 Analyst: JC
 Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	0.0012		mg/kg	0.00065	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00070	1
1,2-Dibromoethane	ND		mg/kg	0.00065	0.00038	1
Ethylbenzene	0.0010	J	mg/kg	0.0013	0.00018	1
p/m-Xylene	0.0019	J	mg/kg	0.0026	0.00072	1
o-Xylene	0.0013		mg/kg	0.0013	0.00038	1
Xylenes, Total	0.0032	J	mg/kg	0.0013	0.00038	1
Isopropylbenzene	0.0015		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.0013	J	mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	0.0023	J	mg/kg	0.0026	0.00043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	163	Q	70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-04
 Client ID: PB-191-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:20
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 19:28
 Analyst: JC
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.00027	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-05
 Client ID: PB-191-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:30
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 11:52
 Analyst: MV
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0036		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.00046	J	mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	146	Q	70-130
Dibromofluoromethane	102		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-06
 Client ID: PB-191-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:45
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 01:22
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0043	0.00043	1
Benzene	ND		mg/kg	0.0011	0.00036	1
1,2-Dichloroethane	ND		mg/kg	0.0022	0.00055	1
Toluene	ND		mg/kg	0.0022	0.0012	1
1,2-Dibromoethane	ND		mg/kg	0.0011	0.00063	1
Ethylbenzene	ND		mg/kg	0.0022	0.00030	1
p/m-Xylene	ND		mg/kg	0.0043	0.0012	1
o-Xylene	ND		mg/kg	0.0022	0.00063	1
Xylenes, Total	ND		mg/kg	0.0022	0.00063	1
Isopropylbenzene	ND		mg/kg	0.0022	0.00023	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0043	0.00042	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0043	0.00072	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-07
 Client ID: PB-191-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 01:42
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00030	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	0.00021	J	mg/kg	0.0011	0.00016	1
p/m-Xylene	0.0023		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.0023		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0030		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00066	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.0031		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	136	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-08
 Client ID: DUP-25
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 00:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 12/20/21 11:02
 Analyst: MV
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00071	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00077	1
1,2-Dibromoethane	ND		mg/kg	0.00071	0.00041	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00079	1
o-Xylene	ND		mg/kg	0.0014	0.00041	1
Xylenes, Total	ND		mg/kg	0.0014	0.00041	1
Isopropylbenzene	0.0082		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-09
 Client ID: FB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 11:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/20/21 16:49
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-09
 Client ID: FB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 11:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/19/21 10:01
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-10
 Client ID: TB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 00:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 12/20/21 16:58
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-10
 Client ID: TB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 00:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 12/23/21 09:02
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	114		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 12/20/21 14:42
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 12/20/21 12:30

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 09-10 Batch: WG1585549-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 12/19/21 08:42
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 09 Batch: WG1585679-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 12/20/21 09:21
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-02,05,08 Batch: WG1586011-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 12/19/21 15:42
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03-04,06-07 Batch: WG1586116-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	86		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 12/23/21 08:15
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 10 Batch: WG1587235-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	112		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits	<i>Column</i>
Microextractables by GC - Westborough Lab Associated sample(s): 09-10 Batch: WG1585549-2									
1,2-Dibromoethane	98		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 09 Batch: WG1585679-3 WG1585679-4								
Methyl tert butyl ether	83		89		63-130	7		20
Benzene	96		100		70-130	4		20
1,2-Dichloroethane	88		88		70-130	0		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		110		70-130	10		20
p/m-Xylene	105		110		70-130	5		20
o-Xylene	100		105		70-130	5		20
Isopropylbenzene	99		110		70-130	11		20
1,3,5-Trimethylbenzene	98		100		64-130	2		20
1,2,4-Trimethylbenzene	96		100		70-130	4		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	93		95		70-130
Toluene-d8	103		102		70-130
4-Bromofluorobenzene	97		100		70-130
Dibromofluoromethane	95		94		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-02,05,08 Batch: WG1586011-3 WG1586011-4								
Methyl tert butyl ether	106		106		66-130	0		30
Benzene	110		108		70-130	2		30
1,2-Dichloroethane	103		104		70-130	1		30
Toluene	108		108		70-130	0		30
1,2-Dibromoethane	99		104		70-130	5		30
Ethylbenzene	111		111		70-130	0		30
p/m-Xylene	119		119		70-130	0		30
o-Xylene	117		117		70-130	0		30
Isopropylbenzene	114		111		70-130	3		30
1,3,5-Trimethylbenzene	115		113		70-130	2		30
1,2,4-Trimethylbenzene	116		114		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	94		96		70-130
Dibromofluoromethane	102		103		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03-04,06-07 Batch: WG1586116-3 WG1586116-4								
Methyl tert butyl ether	84		93		66-130	10		30
Benzene	100		88		70-130	13		30
1,2-Dichloroethane	78		75		70-130	4		30
Toluene	99		86		70-130	14		30
1,2-Dibromoethane	81		85		70-130	5		30
Ethylbenzene	98		84		70-130	15		30
p/m-Xylene	100		86		70-130	15		30
o-Xylene	97		86		70-130	12		30
Isopropylbenzene	102		85		70-130	18		30
1,3,5-Trimethylbenzene	97		83		70-130	16		30
1,2,4-Trimethylbenzene	95		82		70-130	15		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	80		83		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	94		95		70-130
Dibromofluoromethane	85		83		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 10 Batch: WG1587235-3 WG1587235-4								
Methyl tert butyl ether	92		99		63-130	7		20
Benzene	100		110		70-130	10		20
1,2-Dichloroethane	110		120		70-130	9		20
Toluene	100		110		70-130	10		20
Ethylbenzene	100		110		70-130	10		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	100		105		70-130	5		20
Isopropylbenzene	100		110		70-130	10		20
1,3,5-Trimethylbenzene	97		100		64-130	3		20
1,2,4-Trimethylbenzene	96		99		70-130	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	112		114		70-130
Toluene-d8	105		104		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	103		105		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-01
 Client ID: PB-191-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:20
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 21:05
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 12:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.039	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.11	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.22		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.17		mg/kg	0.12	0.022	1
Chrysene	0.16		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.19		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.15	J	mg/kg	0.16	0.048	1
Indeno(1,2,3-cd)pyrene	0.10	J	mg/kg	0.16	0.027	1
Benzo(ghi)perylene	0.088	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-02
 Client ID: PB-191-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:40
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 21:28
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.063	J	mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.092	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.10	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.077	J	mg/kg	0.12	0.023	1
Chrysene	0.080	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.089	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.071	J	mg/kg	0.16	0.050	1
Indeno(1,2,3-cd)pyrene	0.055	J	mg/kg	0.16	0.029	1
Benzo(ghi)perylene	0.062	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	54		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-03
 Client ID: PB-191-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 21:52
 Analyst: CMM
 Percent Solids: 74%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.10	J	mg/kg	0.22	0.027	1
Fluorene	0.054	J	mg/kg	0.22	0.022	1
Phenanthrene	0.19		mg/kg	0.13	0.027	1
Anthracene	0.049	J	mg/kg	0.13	0.043	1
Pyrene	0.14		mg/kg	0.13	0.022	1
Benzo(a)anthracene	0.095	J	mg/kg	0.13	0.025	1
Chrysene	0.095	J	mg/kg	0.13	0.023	1
Benzo(b)fluoranthene	0.099	J	mg/kg	0.13	0.038	1
Benzo(a)pyrene	0.076	J	mg/kg	0.18	0.054	1
Indeno(1,2,3-cd)pyrene	0.056	J	mg/kg	0.18	0.031	1
Benzo(ghi)perylene	0.056	J	mg/kg	0.18	0.026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	48		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-04
 Client ID: PB-191-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:20
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 04:18
 Analyst: CMM
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.14	0.024	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	76		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-05 D
 Client ID: PB-191-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:30
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/23/21 11:44
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 12:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	1.0	0.12	5
Fluorene	ND		mg/kg	1.0	0.098	5
Phenanthrene	ND		mg/kg	0.60	0.12	5
Anthracene	ND		mg/kg	0.60	0.20	5
Pyrene	ND		mg/kg	0.60	0.10	5
Benzo(a)anthracene	ND		mg/kg	0.60	0.11	5
Chrysene	ND		mg/kg	0.60	0.10	5
Benzo(b)fluoranthene	ND		mg/kg	0.60	0.17	5
Benzo(a)pyrene	ND		mg/kg	0.80	0.24	5
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.80	0.14	5
Benzo(ghi)perylene	ND		mg/kg	0.80	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-06
 Client ID: PB-191-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:45
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 22:16
 Analyst: CMM
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 12:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.23		mg/kg	0.20	0.024	1
Fluorene	0.061	J	mg/kg	0.20	0.019	1
Phenanthrene	0.77		mg/kg	0.12	0.024	1
Anthracene	0.16		mg/kg	0.12	0.039	1
Pyrene	0.44		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.21		mg/kg	0.12	0.022	1
Chrysene	0.26		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.17		mg/kg	0.12	0.034	1
Benzo(a)pyrene	0.18		mg/kg	0.16	0.049	1
Indeno(1,2,3-cd)pyrene	0.11	J	mg/kg	0.16	0.028	1
Benzo(ghi)perylene	0.19		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-07
 Client ID: PB-191-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 22:39
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.059	J	mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.084	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.070	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.047	J	mg/kg	0.12	0.022	1
Chrysene	0.052	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.054	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Indeno(1,2,3-cd)pyrene	0.031	J	mg/kg	0.16	0.027	1
Benzo(ghi)perylene	0.043	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-08
 Client ID: DUP-25
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 00:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 12/21/21 23:02
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 12/19/21 12:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	0.044	J	mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.021	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.16	0.028	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-09
 Client ID: FB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 11:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 12/19/21 21:53
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 12/14/21 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	29		21-120
Phenol-d6	31		10-120
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	52		15-120
2,4,6-Tribromophenol	38		10-120
4-Terphenyl-d14	67		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 12/19/21 18:23
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 12/14/21 15:04

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 09 Batch: WG1583217-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	29		21-120
Phenol-d6	35		10-120
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	63		15-120
2,4,6-Tribromophenol	34		10-120
4-Terphenyl-d14	73		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 12/20/21 23:53
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 12/19/21 11:09

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-08 Batch: WG1585193-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.13	0.023
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	86		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 09 Batch: WG1583217-2 WG1583217-3								
Naphthalene	53		68		40-140	25		40
Fluorene	64		73		40-140	13		40
Phenanthrene	65		68		40-140	5		40
Anthracene	65		68		40-140	5		40
Pyrene	71		75		26-127	5		40
Benzo(a)anthracene	74		78		40-140	5		40
Chrysene	69		68		40-140	1		40
Benzo(b)fluoranthene	71		81		40-140	13		40
Benzo(a)pyrene	73		76		40-140	4		40
Indeno(1,2,3-cd)pyrene	75		82		40-140	9		40
Benzo(ghi)perylene	74		79		40-140	7		40

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	40		49		21-120
Phenol-d6	38		46		10-120
Nitrobenzene-d5	61		72		23-120
2-Fluorobiphenyl	55		67		15-120
2,4,6-Tribromophenol	58		60		10-120
4-Terphenyl-d14	73		76		41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-08 Batch: WG1585193-2 WG1585193-3								
Naphthalene	60		66		40-140	10		50
Fluorene	64		71		40-140	10		50
Phenanthrene	64		69		40-140	8		50
Anthracene	64		69		40-140	8		50
Pyrene	65		72		35-142	10		50
Benzo(a)anthracene	62		70		40-140	12		50
Chrysene	64		70		40-140	9		50
Benzo(b)fluoranthene	66		74		40-140	11		50
Benzo(a)pyrene	62		69		40-140	11		50
Indeno(1,2,3-cd)pyrene	65		75		40-140	14		50
Benzo(ghi)perylene	64		72		40-140	12		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	62		72		23-120
2-Fluorobiphenyl	61		69		30-120
4-Terphenyl-d14	68		76		18-120



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-01

Date Collected: 12/09/21 09:20

Client ID: PB-191-01-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	110		mg/kg	2.34	0.126	1	12/21/21 07:10	12/23/21 18:20	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-02

Date Collected: 12/09/21 09:40

Client ID: PB-191-02-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	46.8		mg/kg	2.36	0.126	1	12/21/21 07:10	12/23/21 18:25	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-03

Date Collected: 12/09/21 09:55

Client ID: PB-191-04-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 74%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	295		mg/kg	2.62	0.140	1	12/21/21 07:10	12/23/21 18:38	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-04

Date Collected: 12/09/21 10:20

Client ID: PB-191-05-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	12.8		mg/kg	10.5	0.565	5	12/21/21 07:10	12/27/21 14:02	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-05

Date Collected: 12/09/21 10:30

Client ID: PB-191-06-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	26.5		mg/kg	2.38	0.128	1	12/21/21 07:10	12/23/21 18:47	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-06

Date Collected: 12/09/21 10:45

Client ID: PB-191-07-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	176		mg/kg	4.59	0.246	2	12/21/21 07:10	12/27/21 10:13	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-07

Date Collected: 12/09/21 10:55

Client ID: PB-191-08-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	84.5		mg/kg	2.30	0.123	1	12/21/21 07:10	12/23/21 18:56	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-08

Date Collected: 12/09/21 00:00

Client ID: DUP-25

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	218		mg/kg	4.72	0.253	2	12/21/21 07:10	12/27/21 10:17	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-09
 Client ID: FB-211209
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 11:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	12/19/21 05:13	12/22/21 01:07	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 09 Batch: WG1585121-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	12/19/21 05:13	12/22/21 01:02	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-08 Batch: WG1585681-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	12/21/21 07:10	12/23/21 16:49	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 09 Batch: WG1585121-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-08 Batch: WG1585681-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 09 QC Batch ID: WG1585121-3 WG1585121-4 QC Sample: L2169319-04 Client ID: MS Sample												
Lead, Total	ND	530	516.2	97		495.5	93		75-125	4		20
Total Metals - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1585681-3 QC Sample: L2165811-11 Client ID: MS Sample												
Lead, Total	62.2	51.6	77.5	30	Q	-	-		75-125	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2167657

Report Date: 12/28/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1585681-4 QC Sample: L2165811-11 Client ID: DUP Sample						
Lead, Total	62.2	41.2	mg/kg	41	Q	20

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

**Lab Serial Dilution
Analysis
Batch Quality Control**

Lab Number: L2167657

Report Date: 12/28/21

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-08 QC Batch ID: WG1585681-6 QC Sample: L2165811-11 Client ID: DUP Sample						
Lead, Total	62.2	82.9	mg/kg	33	Q	20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-01

Date Collected: 12/09/21 09:20

Client ID: PB-191-01-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167657**Project Number:** 200.00135.005.03**Report Date:** 12/28/21**SAMPLE RESULTS**

Lab ID: L2167657-02

Date Collected: 12/09/21 09:40

Client ID: PB-191-02-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.6		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-03
 Client ID: PB-191-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 09:55
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.9		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-04
Client ID: PB-191-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:20
Date Received: 12/09/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167657**Project Number:** 200.00135.005.03**Report Date:** 12/28/21**SAMPLE RESULTS**

Lab ID: L2167657-05

Date Collected: 12/09/21 10:30

Client ID: PB-191-06-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-06
 Client ID: PB-191-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 10:45
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-07

Date Collected: 12/09/21 10:55

Client ID: PB-191-08-SS01

Date Received: 12/09/21

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

SAMPLE RESULTS

Lab ID: L2167657-08
 Client ID: DUP-25
 Sample Location: PHILADELPHIA, PA

Date Collected: 12/09/21 00:00
 Date Received: 12/09/21
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	12/10/21 13:04	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.005.03

Lab Number: L2167657

Report Date: 12/28/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-08 QC Batch ID: WG1581718-1 QC Sample: L2167657-01 Client ID: PB-191-01-SS01						
Solids, Total	84.0	83.9	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167657**Project Number:** 200.00135.005.03**Report Date:** 12/28/21**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167657-01A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2167657-01B	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-01C	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-01D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2167657-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2167657-01F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2167657-02A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2167657-02B	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-02C	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-02D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2167657-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2167657-02F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2167657-03A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2167657-03B	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-03C	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-03D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2167657-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2167657-03F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2167657-04A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2167657-04B	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-04C	Vial water preserved	B	NA		3.7	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-04D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2167657**Project Number:** 200.00135.005.03**Report Date:** 12/28/21**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167657-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2167657-04F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2167657-05A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2167657-05B	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-05C	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-05D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2167657-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2167657-05F	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		PA-PAH(14)
L2167657-06A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2167657-06B	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-06C	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-06D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2167657-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2167657-06F	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		PA-PAH(14)
L2167657-07A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2167657-07B	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-07C	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-07D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2167657-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2167657-07F	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		PA-PAH(14)
L2167657-08A	Vial MeOH preserved	A	NA		3.4	Y	Absent		PA-8260HLW(14)
L2167657-08B	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-08C	Vial water preserved	A	NA		3.4	Y	Absent	10-DEC-21 14:06	PA-8260HLW(14)
L2167657-08D	Plastic 2oz unpreserved for TS	A	NA		3.4	Y	Absent		TS(7)
L2167657-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.4	Y	Absent		PB-TI(180)
L2167657-08F	Glass 120ml/4oz unpreserved	A	NA		3.4	Y	Absent		PA-PAH(14)
L2167657-09A	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2167657-09B	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Serial_No:12282113:25
Lab Number: L2167657
Report Date: 12/28/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2167657-09C	Vial HCl preserved	A	NA		3.4	Y	Absent		8011(14)
L2167657-09D	Plastic 250ml HNO3 preserved	A	<2	<2	3.4	Y	Absent		PB-6020T-PPB(180)
L2167657-09E	Amber 250ml unpreserved	A	7	7	3.4	Y	Absent		PA-8270SIM-LVI(7)
L2167657-09F	Amber 250ml unpreserved	A	7	7	3.4	Y	Absent		PA-8270SIM-LVI(7)
L2167657-10A	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2167657-10B	Vial HCl preserved	A	NA		3.4	Y	Absent		PA-8260(14)
L2167657-10C	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		8011(14)
L2167657-10D	Vial Na2S2O3 preserved	A	NA		3.4	Y	Absent		8011(14)



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.005.03

Lab Number: L2167657
Report Date: 12/28/21

Data Qualifiers

- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2167657

Project Number: 200.00135.005.03

Report Date: 12/28/21

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1



Westborough, MA
 TEL: 508-898-9220
 FAX: 508-898-9193

Mansfield, MA
 TEL: 508-822-9300
 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.005.03

Project Manager: William Schmidt

ALPHA Quote #: 13161

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist (see attached for compounds)
 Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 12/10/21

ALPHA Job #: L21167657

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3894

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

PADEP Shortlist 1-5 (see attached)	PADEP Shortlist 1 & 2 (see attached)	PADEP Shortlist 4 (see attached)	PADEP Shortlist 3-5 (see attached)	PADEP Shortlist 5 (see attached)	PADEP Shortlist 6 (see attached)	pH	Benzene	Cumene	Tetraethylene Glycol	VOC portion of PADEP Shortlist (1-6)
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PADEP Short List Analytical List:

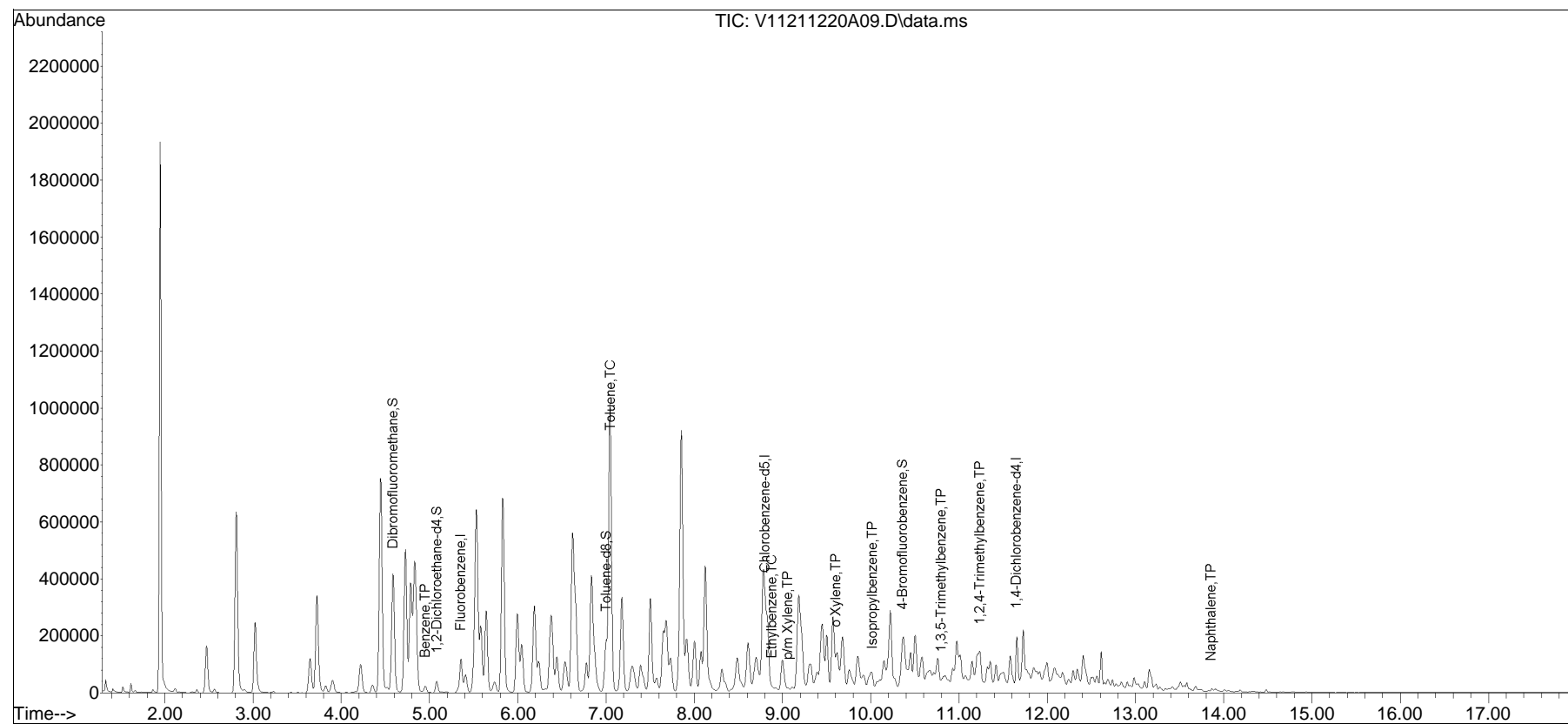
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
 2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
 3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
 4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
 5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
 6. Waste Oil – benzene, toluene, ethyl benzene, cumene, naphthalene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)perylene, lead
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-

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\211220A\
Data File : V11211220A09.D
Acq On : 20 Dec 2021 11:28 am
Operator : VOA111:MV
Sample : L2167657-02,31,2.54,5,,C
Misc : WG1586011,ICAL18566
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Dec 21 08:39:50 2021
Quant Method : I:\VOLATILES\VOA111\2021\211220A\V111_211214A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Dec 14 12:27:59 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20A\V11211220A01.D•

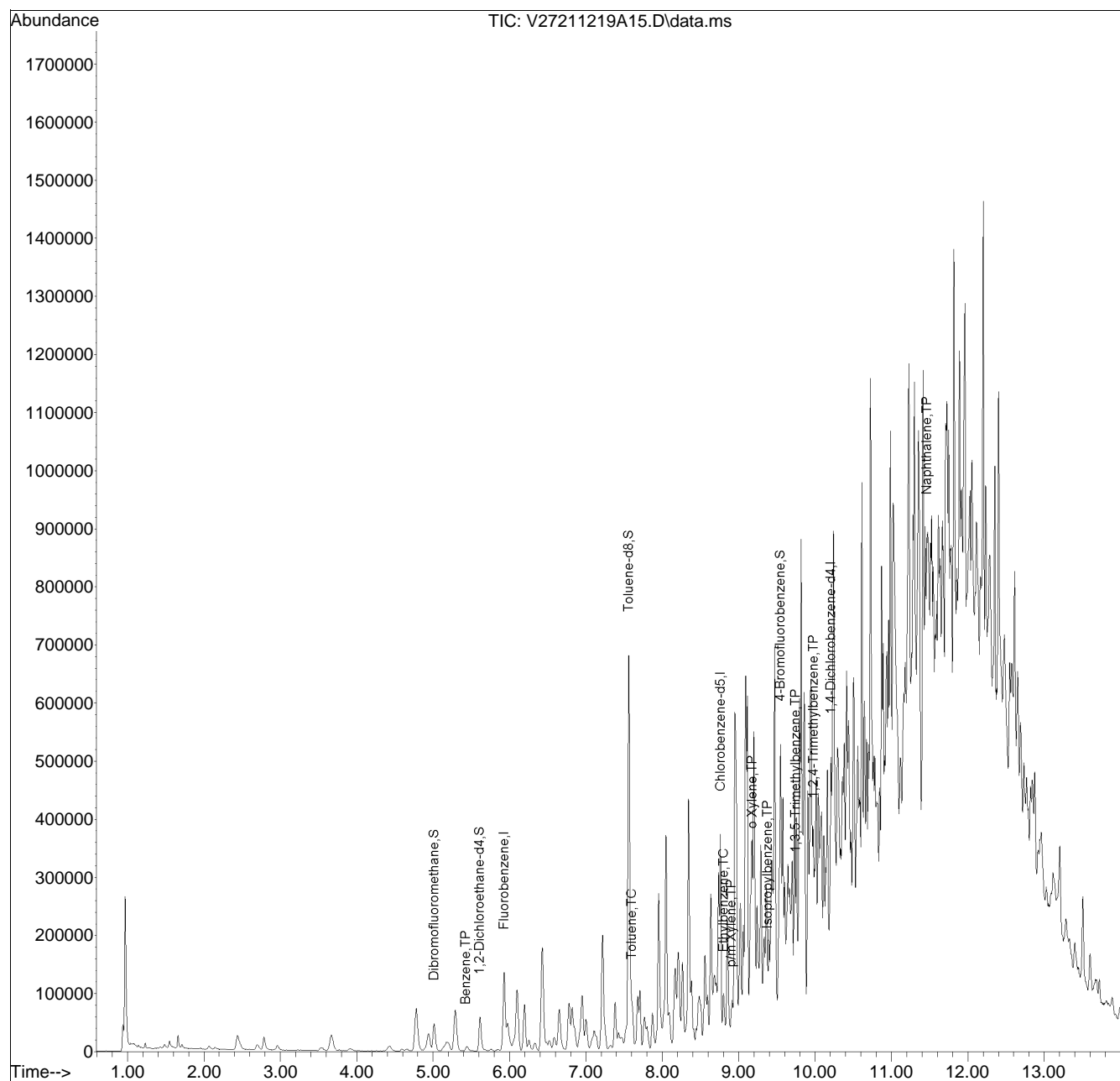


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211219A\
 Data File : V27211219A15.D
 Acq On : 19 Dec 2021 07:07 pm
 Operator : VOA127:JC
 Sample : L2167657-03,31,5.23,5,,B
 Misc : WG1586116,ICAL18439
 ALS Vial : 15 Sample Multiplier: 1

Quant Time: Dec 20 08:26:11 2021
 Quant Method : I:\VOLATILES\VOA127\2021\211219A\V127_211103N_8260D.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Nov 04 16:46:12 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19A\V27211219A01.D•

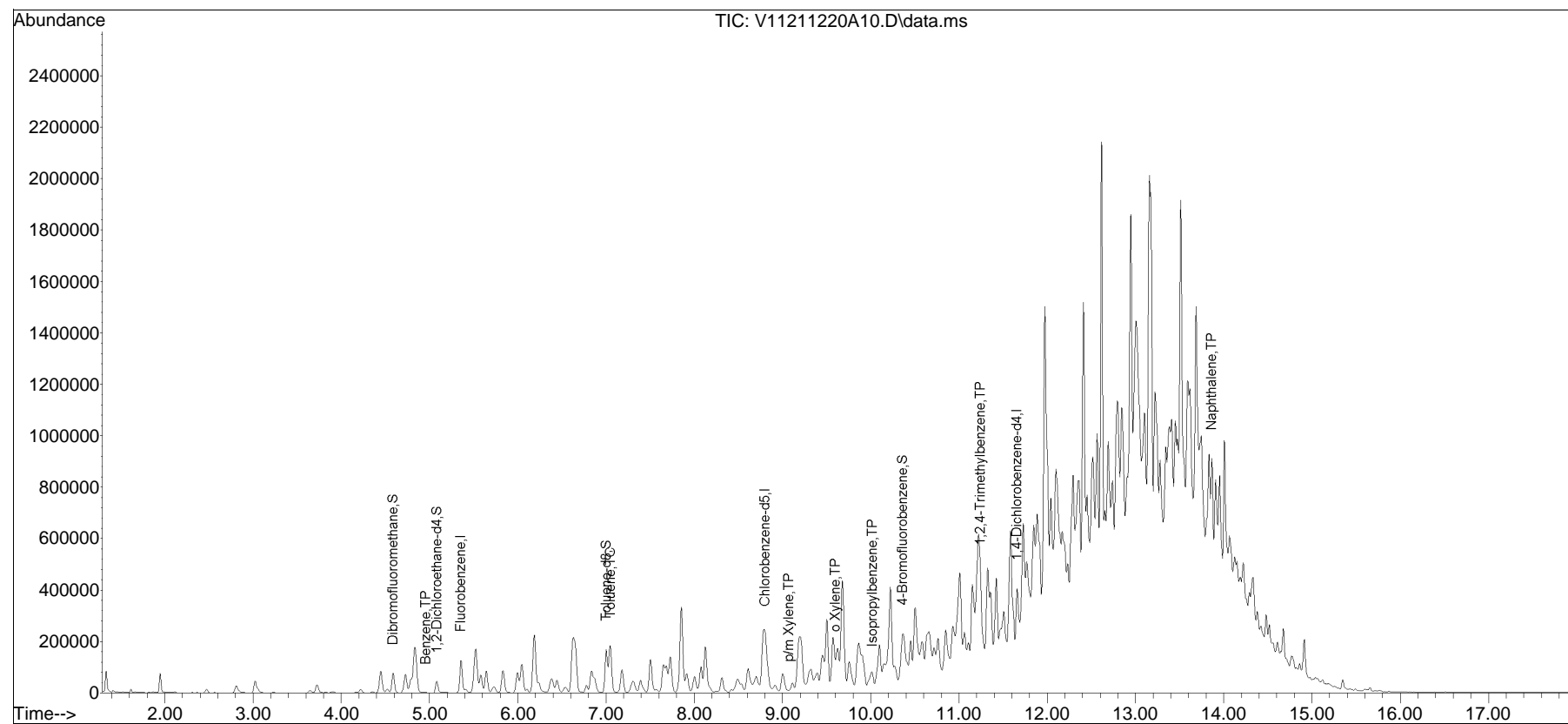


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2021\211220A\
Data File : V11211220A10.D
Acq On : 20 Dec 2021 11:52 am
Operator : VOA111:MV
Sample : L2167657-05,31,5.29,5,,C
Misc : WG1586011,ICAL18566
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 21 08:40:08 2021
Quant Method : I:\VOLATILES\VOA111\2021\211220A\V111_211214A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Dec 14 12:27:59 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20A\V11211220A01.D•

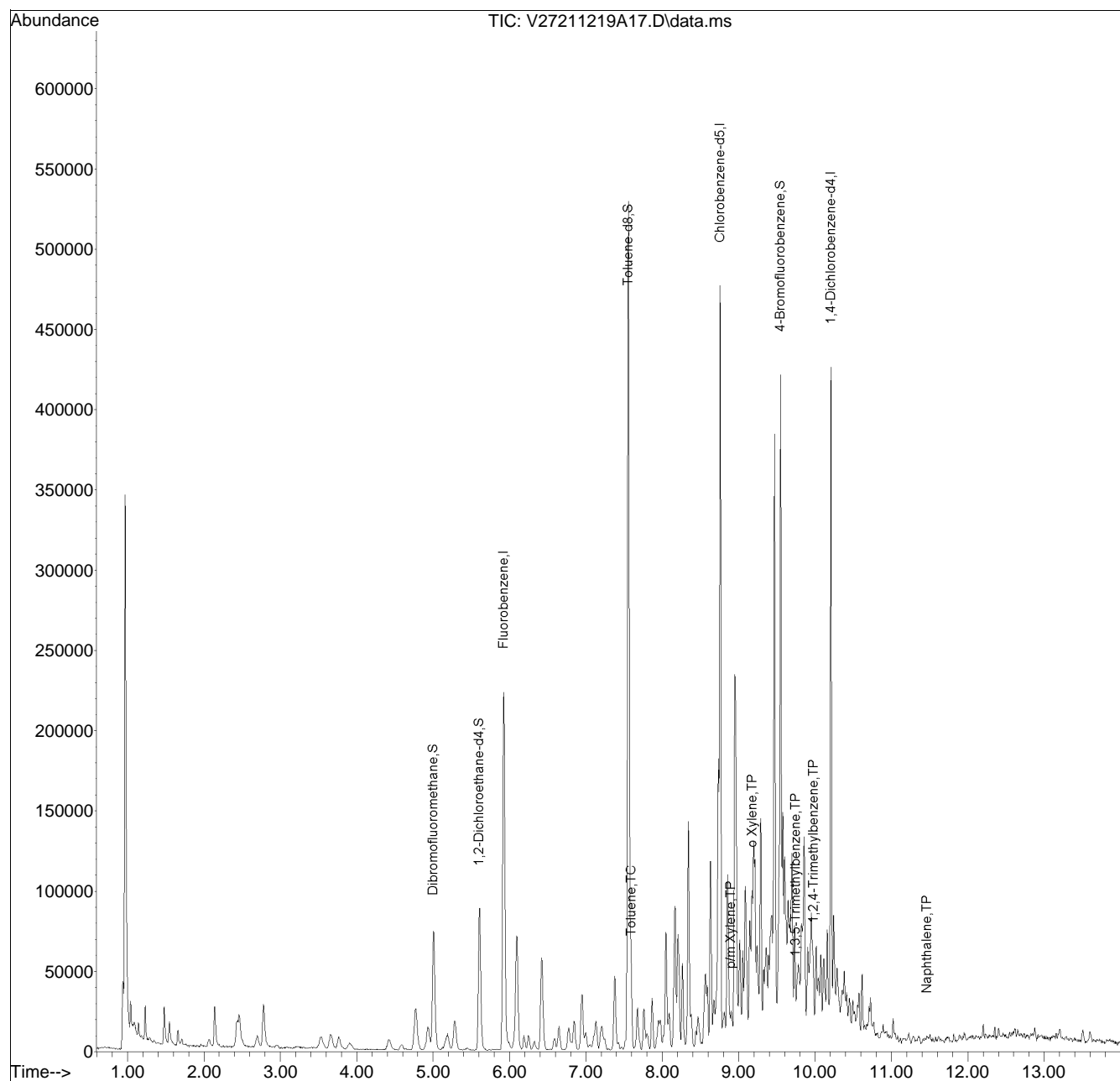


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211219A\
Data File : V27211219A17.D
Acq On : 20 Dec 2021 01:22 am
Operator : VOA127:JC
Sample : L2167657-06,31,2.84,5,,B
Misc : WG1586116,ICAL18439
ALS Vial : 17 Sample Multiplier: 1

Quant Time: Dec 20 08:26:26 2021
Quant Method : I:\VOLATILES\VOA127\2021\211219A\V127_211103N_8260D.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Nov 04 16:46:12 2021
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19A\V27211219A01.D•

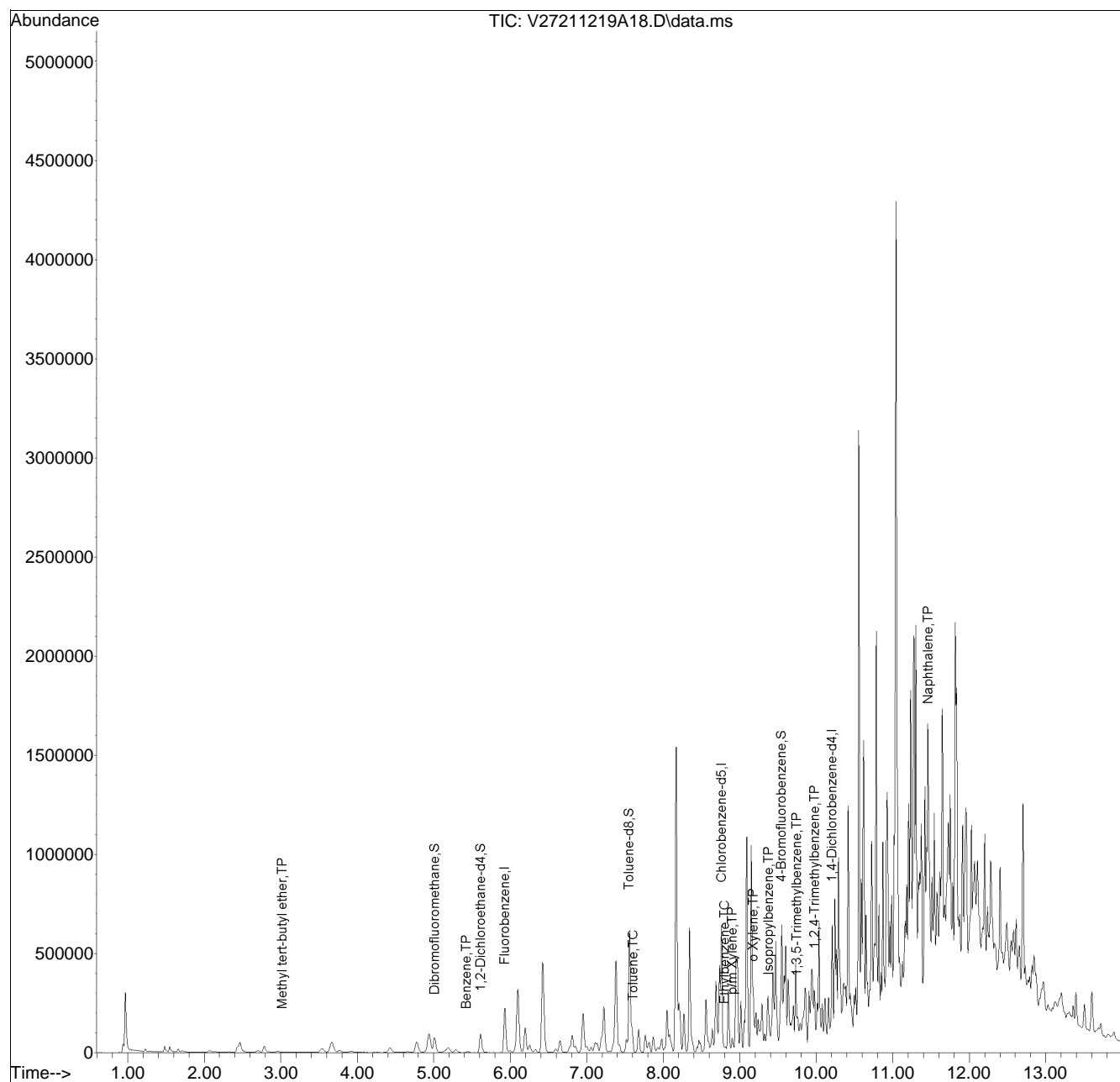


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2021\211219A\
 Data File : V27211219A18.D
 Acq On : 20 Dec 2021 01:42 am
 Operator : VOA127:JC
 Sample : L2167657-07,31,5.26,5,,B
 Misc : WG1586116,ICAL18439
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Dec 20 08:26:43 2021
 Quant Method : I:\VOLATILES\VOA127\2021\211219A\V127_211103N_8260D.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Nov 04 16:46:12 2021
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19A\V27211219A01.D•





ANALYTICAL REPORT

Lab Number:	L2236582
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/15/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236582-01	PB-847-01-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:00	07/08/22
L2236582-02	PB-847-02-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:10	07/08/22
L2236582-03	PB-847-03-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:20	07/08/22
L2236582-04	PB-847-04-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:30	07/08/22
L2236582-05	PB-847-05-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:40	07/08/22
L2236582-06	PB-847-06-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:50	07/08/22
L2236582-07	PB-847-07-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:00	07/08/22
L2236582-08	PB-847-08-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:10	07/08/22
L2236582-09	PB-847-09-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:20	07/08/22
L2236582-10	PB-847-10-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:30	07/08/22
L2236582-11	PB-847-11-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:40	07/08/22
L2236582-12	PB-847-12-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:50	07/08/22
L2236582-13	PB-847-13-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:00	07/08/22
L2236582-14	PB-847-14-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:10	07/08/22
L2236582-15	PB-847-15-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:20	07/08/22
L2236582-16	PB-847-16-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:30	07/08/22
L2236582-17	PB-847-17-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:40	07/08/22
L2236582-18	FB-070822-1	WATER	PHILADELPHIA, PA	07/08/22 13:00	07/08/22
L2236582-19	FB-070822-2	WATER	PHILADELPHIA, PA	07/08/22 13:05	07/08/22
L2236582-20	DUP-37	SOIL	PHILADELPHIA, PA	07/08/22 00:00	07/08/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2236582-12: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (268%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236582-13D, -14D, and -15D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2236582-13D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (171%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236582-14D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (150%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236582-15D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (159%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236582-17: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (202%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2236582-15D: The sample has elevated detection limits due to the dilution required by the sample matrix.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

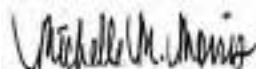
Case Narrative (continued)

Total Metals

L2236582-07, -10, -11, -12, -14, -15, and -17: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Michelle M. Morris

Title: Technical Director/Representative

Date: 07/15/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-01
 Client ID: PB-847-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 13:18
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-02
 Client ID: PB-847-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 13:48
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-03
 Client ID: PB-847-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 14:17
 Analyst: JC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-04
 Client ID: PB-847-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 14:47
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00088	0.00022	1
Toluene	ND		mg/kg	0.00088	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00088	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00049	1
o-Xylene	ND		mg/kg	0.00088	0.00026	1
Xylenes, Total	ND		mg/kg	0.00088	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00088	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-05
 Client ID: PB-847-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 15:17
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-06
 Client ID: PB-847-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 15:46
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00086	0.00022	1
Toluene	ND		mg/kg	0.00086	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00086	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00086	0.00025	1
Xylenes, Total	ND		mg/kg	0.00086	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00086	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-07
 Client ID: PB-847-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 16:15
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.00029	J	mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-08
 Client ID: PB-847-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 16:45
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-09
 Client ID: PB-847-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 17:14
 Analyst: JC
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00024	J	mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-10
 Client ID: PB-847-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 17:43
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00029	1
Xylenes, Total	ND		mg/kg	0.00098	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-11
 Client ID: PB-847-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 18:11
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0035		mg/kg	0.0020	0.00020	1
Benzene	0.00047	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	0.00012	J	mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-12
 Client ID: PB-847-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:46
 Analyst: MKS
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	0.0028		mg/kg	0.00087	0.00012	1
p/m-Xylene	0.00065	J	mg/kg	0.0017	0.00048	1
o-Xylene	0.00025	J	mg/kg	0.00087	0.00025	1
Xylenes, Total	0.00090	J	mg/kg	0.00087	0.00025	1
Isopropylbenzene	0.013		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	0.054		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	0.020		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	120		70-130
4-Bromofluorobenzene	268	Q	70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-13 D
 Client ID: PB-847-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 01:06
 Analyst: MKS
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.43	0.043	4
Benzene	0.051	J	mg/kg	0.11	0.036	4
1,2-Dichloroethane	ND		mg/kg	0.21	0.055	4
Toluene	ND		mg/kg	0.21	0.12	4
1,2-Dibromoethane	ND		mg/kg	0.11	0.063	4
Ethylbenzene	0.20	J	mg/kg	0.21	0.030	4
p/m-Xylene	0.15	J	mg/kg	0.43	0.12	4
o-Xylene	0.080	J	mg/kg	0.21	0.062	4
Xylenes, Total	0.23	J	mg/kg	0.21	0.062	4
Isopropylbenzene	0.94		mg/kg	0.21	0.023	4
1,3,5-Trimethylbenzene	1.4		mg/kg	0.43	0.041	4
1,2,4-Trimethylbenzene	2.2		mg/kg	0.43	0.072	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	171	Q	70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-14 D
 Client ID: PB-847-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 19:37
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.50	0.051	4
Benzene	ND		mg/kg	0.12	0.042	4
1,2-Dichloroethane	ND		mg/kg	0.25	0.065	4
Toluene	ND		mg/kg	0.25	0.14	4
1,2-Dibromoethane	ND		mg/kg	0.12	0.074	4
Ethylbenzene	ND		mg/kg	0.25	0.036	4
p/m-Xylene	ND		mg/kg	0.50	0.14	4
o-Xylene	ND		mg/kg	0.25	0.073	4
Xylenes, Total	ND		mg/kg	0.25	0.073	4
Isopropylbenzene	1.3		mg/kg	0.25	0.027	4
1,3,5-Trimethylbenzene	ND		mg/kg	0.50	0.049	4
1,2,4-Trimethylbenzene	ND		mg/kg	0.50	0.084	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	130		70-130
4-Bromofluorobenzene	150	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-15 D
 Client ID: PB-847-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 19:09
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.46	0.047	4
Benzene	0.063	J	mg/kg	0.12	0.038	4
1,2-Dichloroethane	ND		mg/kg	0.23	0.060	4
Toluene	ND		mg/kg	0.23	0.12	4
1,2-Dibromoethane	ND		mg/kg	0.12	0.068	4
Ethylbenzene	0.24		mg/kg	0.23	0.033	4
p/m-Xylene	0.18	J	mg/kg	0.46	0.13	4
o-Xylene	0.090	J	mg/kg	0.23	0.067	4
Xylenes, Total	0.27	J	mg/kg	0.23	0.067	4
Isopropylbenzene	1.2		mg/kg	0.23	0.025	4
1,3,5-Trimethylbenzene	1.8		mg/kg	0.46	0.045	4
1,2,4-Trimethylbenzene	2.8		mg/kg	0.46	0.077	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	159	Q	70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-16
 Client ID: PB-847-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 20:34
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-17
 Client ID: PB-847-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 21:03
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	0.0042		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	0.00073	J	mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	0.018		mg/kg	0.0011	0.00015	1
p/m-Xylene	0.015		mg/kg	0.0021	0.00059	1
o-Xylene	0.0017		mg/kg	0.0011	0.00031	1
Xylenes, Total	0.017		mg/kg	0.0011	0.00031	1
Isopropylbenzene	0.027		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0088		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.11		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	125		70-130
4-Bromofluorobenzene	202	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-18
 Client ID: FB-070822-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:12
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-18
 Client ID: FB-070822-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 20:54
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	125		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-19
 Client ID: FB-070822-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:05
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:19
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-19
 Client ID: FB-070822-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:05
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 20:28
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	126		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-20
 Client ID: DUP-37
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 21:31
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/13/22 14:45
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 18-19 Batch: WG1662273-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/13/22 12:48
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-11,16-17,20 Batch: WG1662895-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/13/22 12:48
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 14-15 Batch: WG1662896-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/14/22 18:32
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 12 Batch: WG1663237-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/14/22 18:32
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 13 Batch: WG1663238-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/13/22 17:26
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 18-19 Batch: WG1663309-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	119		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236582

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 18-19 Batch: WG1662273-2									
1,2-Dibromoethane	110		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236582

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-11,16-17,20 Batch: WG1662895-3 WG1662895-4								
Methyl tert butyl ether	120		122		66-130	2		30
Benzene	111		111		70-130	0		30
1,2-Dichloroethane	102		102		70-130	0		30
Toluene	112		113		70-130	1		30
1,2-Dibromoethane	111		114		70-130	3		30
Ethylbenzene	111		111		70-130	0		30
p/m-Xylene	111		112		70-130	1		30
o-Xylene	109		111		70-130	2		30
Isopropylbenzene	115		117		70-130	2		30
1,3,5-Trimethylbenzene	112		111		70-130	1		30
1,2,4-Trimethylbenzene	111		112		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	107		108		70-130
Dibromofluoromethane	90		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 14-15 Batch: WG1662896-3 WG1662896-4								
Methyl tert butyl ether	120		122		66-130	2		30
Benzene	111		111		70-130	0		30
1,2-Dichloroethane	102		102		70-130	0		30
Toluene	112		113		70-130	1		30
1,2-Dibromoethane	111		114		70-130	3		30
Ethylbenzene	111		111		70-130	0		30
p/m-Xylene	111		112		70-130	1		30
o-Xylene	109		111		70-130	2		30
Isopropylbenzene	115		117		70-130	2		30
1,3,5-Trimethylbenzene	112		111		70-130	1		30
1,2,4-Trimethylbenzene	111		112		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	103		104		70-130
4-Bromofluorobenzene	107		108		70-130
Dibromofluoromethane	90		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236582

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 12 Batch: WG1663237-3 WG1663237-4								
Methyl tert butyl ether	104		101		66-130	3		30
Benzene	99		96		70-130	3		30
1,2-Dichloroethane	101		98		70-130	3		30
Toluene	90		87		70-130	3		30
1,2-Dibromoethane	97		96		70-130	1		30
Ethylbenzene	97		94		70-130	3		30
p/m-Xylene	96		94		70-130	2		30
o-Xylene	98		96		70-130	2		30
Isopropylbenzene	99		96		70-130	3		30
1,3,5-Trimethylbenzene	98		95		70-130	3		30
1,2,4-Trimethylbenzene	97		93		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	97		99		70-130
4-Bromofluorobenzene	99		97		70-130
Dibromofluoromethane	100		104		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 13 Batch: WG1663238-3 WG1663238-4								
Methyl tert butyl ether	104		101		66-130	3		30
Benzene	99		96		70-130	3		30
1,2-Dichloroethane	101		98		70-130	3		30
Toluene	90		87		70-130	3		30
1,2-Dibromoethane	97		96		70-130	1		30
Ethylbenzene	97		94		70-130	3		30
p/m-Xylene	96		94		70-130	2		30
o-Xylene	98		96		70-130	2		30
Isopropylbenzene	99		96		70-130	3		30
1,3,5-Trimethylbenzene	98		95		70-130	3		30
1,2,4-Trimethylbenzene	97		93		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	97		99		70-130
4-Bromofluorobenzene	99		97		70-130
Dibromofluoromethane	100		104		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 18-19 Batch: WG1663309-3 WG1663309-4								
Methyl tert butyl ether	95		97		63-130	2		20
Benzene	98		100		70-130	2		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	95		96		70-130	1		20
Ethylbenzene	94		96		70-130	2		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		92		70-130	4		20
1,3,5-Trimethylbenzene	91		95		64-130	4		20
1,2,4-Trimethylbenzene	90		94		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		105		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	102		94		70-130
Dibromofluoromethane	102		104		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-01
 Client ID: PB-847-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 13:00
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	65		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-02
 Client ID: PB-847-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 13:24
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	133	Q	23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	70		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-03
 Client ID: PB-847-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 13:47
 Analyst: JG
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-04
 Client ID: PB-847-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 14:11
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	141	Q	23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	73		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-05
 Client ID: PB-847-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 14:58
 Analyst: JG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	50		30-120
4-Terphenyl-d14	54		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-06
 Client ID: PB-847-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 15:21
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-07
 Client ID: PB-847-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 15:45
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	60		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-08
 Client ID: PB-847-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 16:08
 Analyst: JG
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	57		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-09
 Client ID: PB-847-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 16:32
 Analyst: JG
 Percent Solids: 77%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.026	1
Fluorene	ND		mg/kg	0.21	0.021	1
Phenanthrene	ND		mg/kg	0.13	0.026	1
Anthracene	ND		mg/kg	0.13	0.042	1
Pyrene	ND		mg/kg	0.13	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.024	1
Chrysene	ND		mg/kg	0.13	0.022	1
Benzo(b)fluoranthene	ND		mg/kg	0.13	0.036	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1
Benzo(ghi)perylene	ND		mg/kg	0.17	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	134	Q	23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	71		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-10
 Client ID: PB-847-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 16:55
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	56		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-11
 Client ID: PB-847-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 17:19
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	163	Q	23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-12
 Client ID: PB-847-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 17:42
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	64		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-13
 Client ID: PB-847-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 18:06
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.13	J	mg/kg	0.19	0.023	1
Fluorene	0.12	J	mg/kg	0.19	0.019	1
Phenanthrene	0.29		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	130	Q	23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	62		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-14
 Client ID: PB-847-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 18:29
 Analyst: JG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.043	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	55		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-15 D
 Client ID: PB-847-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 10:21
 Analyst: JG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	7.0		mg/kg	1.9	0.23	10
Fluorene	5.3		mg/kg	1.9	0.18	10
Phenanthrene	12.		mg/kg	1.1	0.23	10
Anthracene	1.7		mg/kg	1.1	0.36	10
Pyrene	0.50	J	mg/kg	1.1	0.19	10
Benzo(a)anthracene	ND		mg/kg	1.1	0.21	10
Chrysene	ND		mg/kg	1.1	0.20	10
Benzo(b)fluoranthene	ND		mg/kg	1.1	0.32	10
Benzo(a)pyrene	ND		mg/kg	1.5	0.46	10
Benzo(ghi)perylene	ND		mg/kg	1.5	0.22	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	166	Q	23-120
2-Fluorobiphenyl	95		30-120
4-Terphenyl-d14	96		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-16
 Client ID: PB-847-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 19:16
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-17
 Client ID: PB-847-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 19:40
 Analyst: JG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	61		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-18
 Client ID: FB-070822-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/10/22 16:03
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	38		15-120
4-Terphenyl-d14	40	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-19
 Client ID: FB-070822-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:05
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/10/22 16:19
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	0.02	J	ug/l	0.10	0.01	1
Phenanthrene	0.04	J	ug/l	0.05	0.02	1
Anthracene	0.01	J	ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	37		23-120
2-Fluorobiphenyl	38		15-120
4-Terphenyl-d14	40	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-20
 Client ID: DUP-37
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 20:03
 Analyst: JG
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	121	Q	23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/10/22 15:47
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 18-19 Batch: WG1660895-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	35		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	32	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/11/22 11:50
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-17,20 Batch: WG1660990-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	58		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 18-19 Batch: WG1660895-2 WG1660895-3								
Naphthalene	50		50		40-140	0		40
Fluorene	48		46		40-140	4		40
Phenanthrene	46		44		40-140	4		40
Anthracene	47		45		40-140	4		40
Pyrene	54		50		26-127	8		40
Benzo(a)anthracene	43		40		40-140	7		40
Chrysene	46		45		40-140	2		40
Benzo(b)fluoranthene	48		45		40-140	6		40
Benzo(a)pyrene	45		41		40-140	9		40
Benzo(ghi)perylene	50		47		40-140	6		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	27		26		23-120
2-Fluorobiphenyl	25		24		15-120
4-Terphenyl-d14	27	Q	25	Q	41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-17,20 Batch: WG1660990-2 WG1660990-3								
Naphthalene	57		63		40-140	10		50
Fluorene	64		68		40-140	6		50
Phenanthrene	60		65		40-140	8		50
Anthracene	62		67		40-140	8		50
Pyrene	60		65		35-142	8		50
Benzo(a)anthracene	67		71		40-140	6		50
Chrysene	64		70		40-140	9		50
Benzo(b)fluoranthene	66		76		40-140	14		50
Benzo(a)pyrene	74		75		40-140	1		50
Benzo(ghi)perylene	54		67		40-140	21		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	107		126	Q	23-120
2-Fluorobiphenyl	54		58		30-120
4-Terphenyl-d14	59		65		18-120

METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-01
 Client ID: PB-847-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.08		mg/kg	2.37	0.127	1	07/12/22 12:15	07/15/22 07:18	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-02
 Client ID: PB-847-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.67		mg/kg	2.42	0.130	1	07/12/22 12:15	07/15/22 07:23	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-03
 Client ID: PB-847-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.07		mg/kg	2.17	0.116	1	07/12/22 12:15	07/15/22 07:28	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-04
 Client ID: PB-847-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.69		mg/kg	2.26	0.121	1	07/12/22 12:15	07/15/22 08:04	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-05
 Client ID: PB-847-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.51		mg/kg	2.23	0.119	1	07/12/22 12:15	07/15/22 08:09	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-06
 Client ID: PB-847-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.69		mg/kg	2.31	0.124	1	07/12/22 12:15	07/15/22 08:13	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-07
 Client ID: PB-847-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.30		mg/kg	4.63	0.248	2	07/12/22 12:15	07/15/22 15:40	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-08
 Client ID: PB-847-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.46		mg/kg	2.36	0.126	1	07/12/22 12:15	07/15/22 08:23	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-09
 Client ID: PB-847-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.13		mg/kg	2.50	0.134	1	07/12/22 12:15	07/15/22 08:28	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-10
 Client ID: PB-847-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.37		mg/kg	4.80	0.257	2	07/12/22 12:15	07/15/22 15:45	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-11
 Client ID: PB-847-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.97		mg/kg	4.44	0.238	2	07/12/22 12:15	07/15/22 09:39	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-12
 Client ID: PB-847-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.35		mg/kg	4.54	0.244	2	07/12/22 12:15	07/15/22 09:44	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-13
 Client ID: PB-847-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.88		mg/kg	2.30	0.123	1	07/12/22 12:15	07/15/22 08:47	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-14
 Client ID: PB-847-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.24		mg/kg	4.85	0.260	2	07/12/22 12:15	07/15/22 10:32	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-15
 Client ID: PB-847-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.06		mg/kg	4.52	0.242	2	07/12/22 12:15	07/15/22 10:37	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-16
 Client ID: PB-847-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.17		mg/kg	2.40	0.128	1	07/12/22 12:15	07/15/22 09:58	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-17
 Client ID: PB-847-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.26		mg/kg	4.70	0.252	2	07/12/22 12:15	07/15/22 10:42	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-18
 Client ID: FB-070822-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 09:51	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-19
 Client ID: FB-070822-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:05
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 10:06	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-20
 Client ID: DUP-37
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.52		mg/kg	2.34	0.125	1	07/12/22 12:15	07/15/22 10:08	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 18-19 Batch: WG1660944-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 09:42	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-17,20 Batch: WG1661452-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/12/22 12:15	07/15/22 07:09	1,6010D	SB

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236582

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 Batch: WG1660944-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-17,20 Batch: WG1661452-2 SRM Lot Number: D113-540								
Lead, Total	80		-		72-128	-		

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 QC Batch ID: WG1660944-3 QC Sample: L2236582-18 Client ID: FB-070822-1												
Lead, Total	ND	530	536.0	101		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-17,20 QC Batch ID: WG1661452-3 QC Sample: L2236658-01 Client ID: MS Sample												
Lead, Total	4.11	42.6	37.2	78		-	-		75-125	-		20

Lab Duplicate Analysis *Batch Quality Control*

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 QC Batch ID: WG1660944-4 QC Sample: L2236582-18 Client ID: FB-070822-1						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-17,20 QC Batch ID: WG1661452-4 QC Sample: L2236658-01 Client ID: DUP Sample						
Lead, Total	4.11	3.93J	mg/kg	NC		20



INORGANICS & MISCELLANEOUS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-01
Client ID: PB-847-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:00
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-02
Client ID: PB-847-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:10
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.4		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-03
Client ID: PB-847-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:20
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.5		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-04
Client ID: PB-847-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:30
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-05
Client ID: PB-847-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:40
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-06
Client ID: PB-847-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-07
Client ID: PB-847-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.0		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-08
Client ID: PB-847-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.9		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-09
Client ID: PB-847-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.1		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-10
Client ID: PB-847-10-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-11
Client ID: PB-847-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-12
Client ID: PB-847-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:50
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-13
Client ID: PB-847-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:00
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-14
Client ID: PB-847-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:10
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.9		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-15
Client ID: PB-847-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.1		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-16
Client ID: PB-847-16-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-17
Client ID: PB-847-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.3		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236582-20
Client ID: DUP-37
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.3		%	0.100	NA	1	-	07/11/22 22:15	121,2540G	MF



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-17,20 QC Batch ID: WG1661509-1 QC Sample: L2236582-01 Client ID: PB-847-01-SS01						
Solids, Total	81.4	81.7	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236582**Project Number:** 200.00135.006**Report Date:** 07/15/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-01A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-01B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-01C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-01D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-01F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-02A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-02B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-02C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-02D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-02F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-03A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-03B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-03C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-03D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-03F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-04A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-04B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-04C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-04D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236582**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-04F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-05A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-05B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-05C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-05D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-05F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-06A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-06B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-06C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-06D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-06F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-07A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-07B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-07C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-07D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-07F	Glass 250ml/8oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-08A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-08B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-08C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-08D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-08F	Glass 250ml/8oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-09A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-09B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236582**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-09C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-09D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-09F	Glass 250ml/8oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-10A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-10B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-10C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-10D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-10F	Glass 250ml/8oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-11A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-11B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-11C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-11D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-11F	Glass 250ml/8oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-12A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-12B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-12C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-12D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-12F	Glass 250ml/8oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-13A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-13B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-13C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-13D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-13E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-13F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236582**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-14A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-14B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-14C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-14D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-14F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-15A	Vial MeOH preserved	B	NA		4.9	Y	Absent		PA-8260HLW(14)
L2236582-15B	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-15C	Vial water preserved	B	NA		4.9	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-15D	Plastic 2oz unpreserved for TS	B	NA		4.9	Y	Absent		TS(7)
L2236582-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.9	Y	Absent		PB-TI(180)
L2236582-15F	Glass 120ml/4oz unpreserved	B	NA		4.9	Y	Absent		PA-PAH(14)
L2236582-16A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-16B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-16C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-16D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-16E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-16F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-17A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-17B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-17C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-17D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-17E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-17F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)
L2236582-18A	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-18B	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-18C	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-18D	Plastic 250ml HNO3 preserved	A	<2	<2	2.6	Y	Absent		PB-6020T-PPB(180)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Serial_No:07152217:51
Lab Number: L2236582
Report Date: 07/15/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236582-18E	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236582-18F	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236582-19A	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-19B	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-19C	Vial HCl preserved	A	NA		2.6	Y	Absent		8011(14),PA-8260(14)
L2236582-19D	Plastic 250ml HNO3 preserved	A	<2	<2	2.6	Y	Absent		PB-6020T-PPB(180)
L2236582-19E	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236582-19F	Amber 250ml unpreserved	A	7	7	2.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236582-20A	Vial MeOH preserved	A	NA		2.6	Y	Absent		PA-8260HLW(14)
L2236582-20B	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-20C	Vial water preserved	A	NA		2.6	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236582-20D	Plastic 2oz unpreserved for TS	A	NA		2.6	Y	Absent		TS(7)
L2236582-20E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.6	Y	Absent		PB-TI(180)
L2236582-20F	Glass 120ml/4oz unpreserved	A	NA		2.6	Y	Absent		PA-PAH(14)



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236582
Report Date: 07/15/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

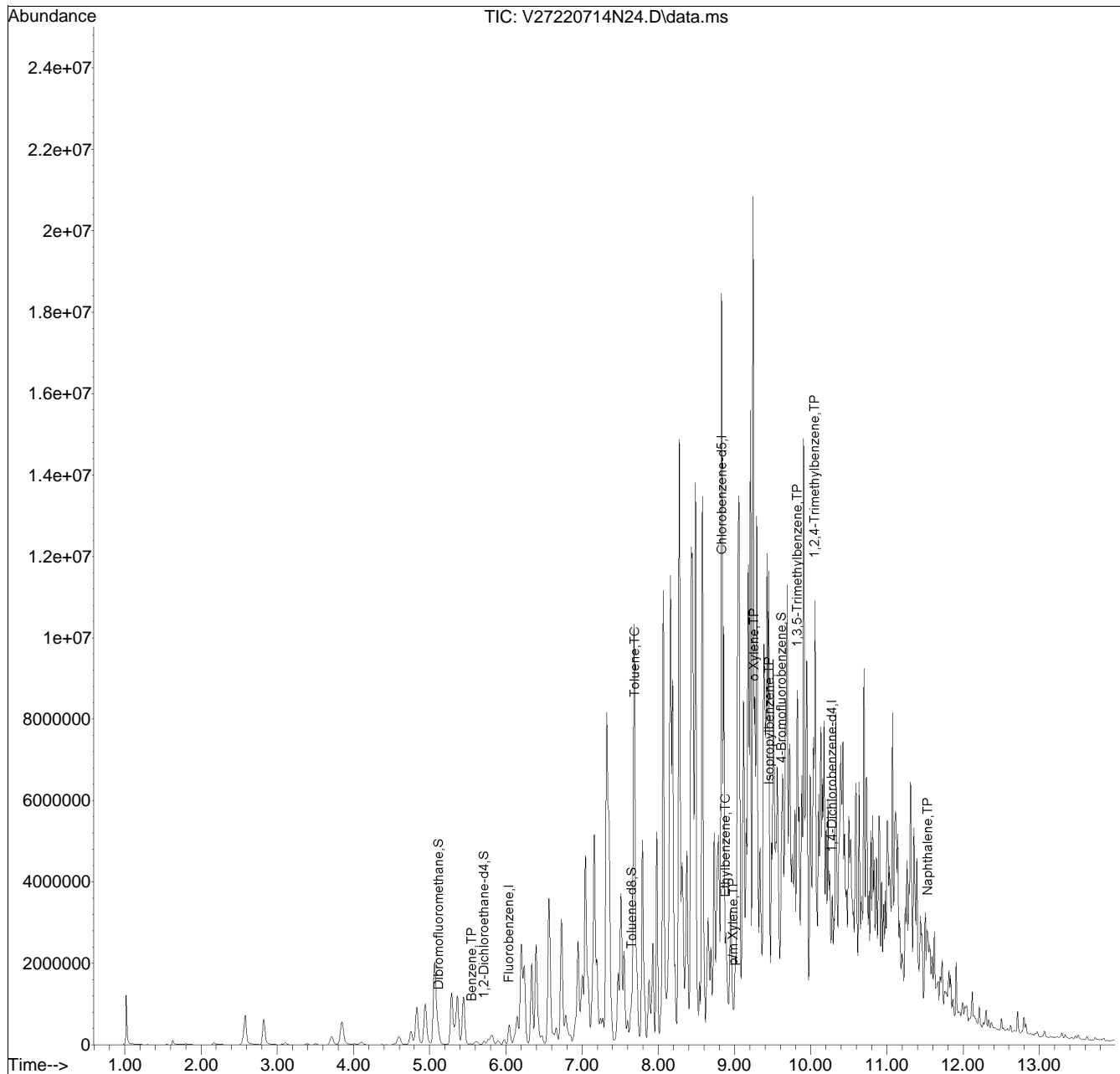
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220714N\
Data File : V27220714N24.D
Acq On : 15 Jul 2022 12:46 am
Operator : VOA127:MKS
Sample : 12236582-12,31,6.79,5,,b,r2f
Misc : WG1663237,ICAL19153
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Jul 15 07:31:13 2022
Quant Method : I:\VOLATILES\VOA127\2022\220714N\V127_220706A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jul 07 06:48:30 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14N\V27220714N01.D•

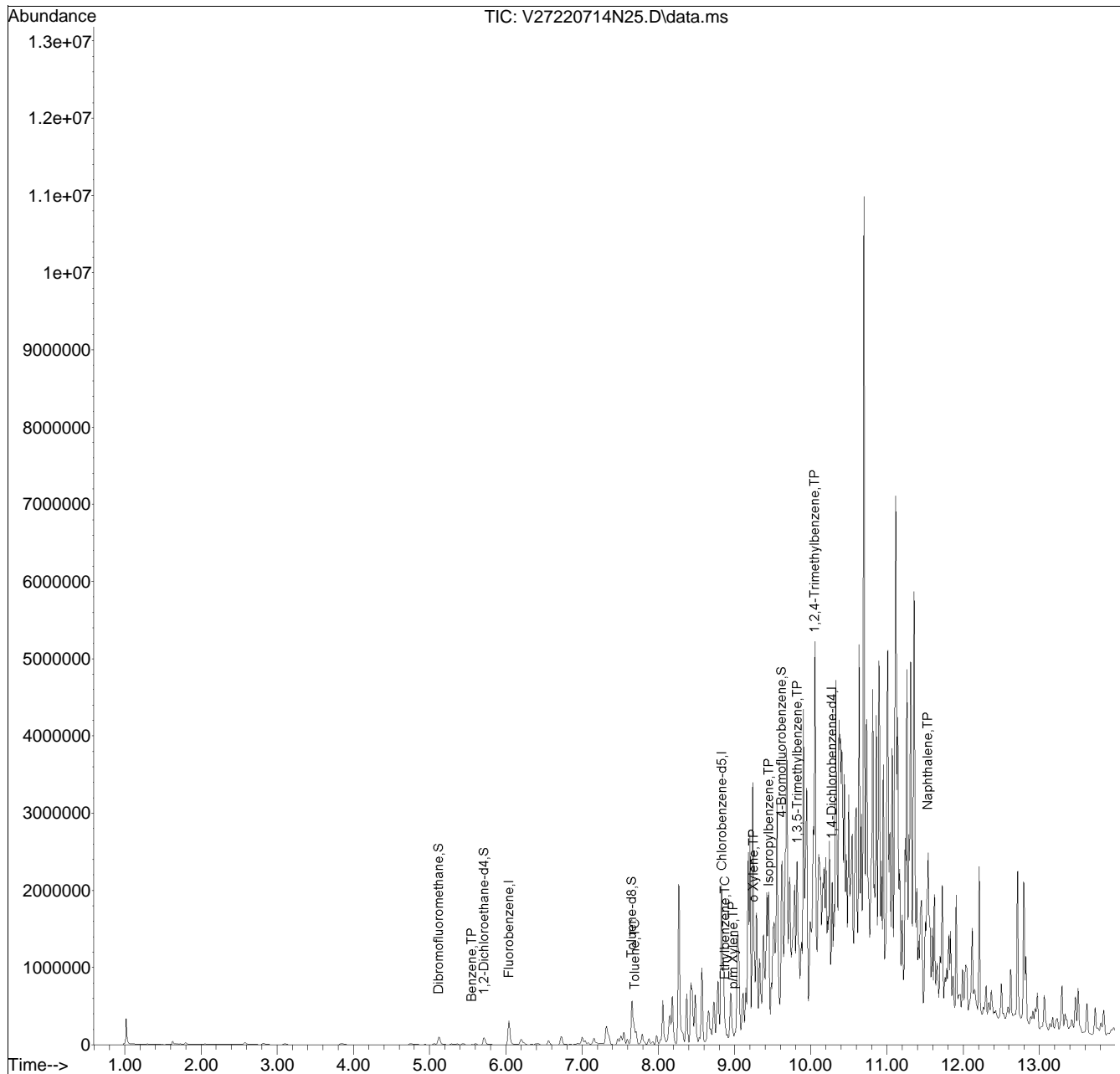


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2022\220714N\
 Data File : V27220714N25.D
 Acq On : 15 Jul 2022 01:06 am
 Operator : VOA127:MKS
 Sample : 12236582-13d,31h,6.60,5,0.025,,a,r2f
 Misc : WG1663238,ICAL19153
 ALS Vial : 25 Sample Multiplier: 1

Quant Time: Jul 15 06:42:38 2022
 Quant Method : I:\VOLATILES\VOA127\2022\220714N\V127_220706A_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Jul 07 06:48:30 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14N\V27220714N01.D•

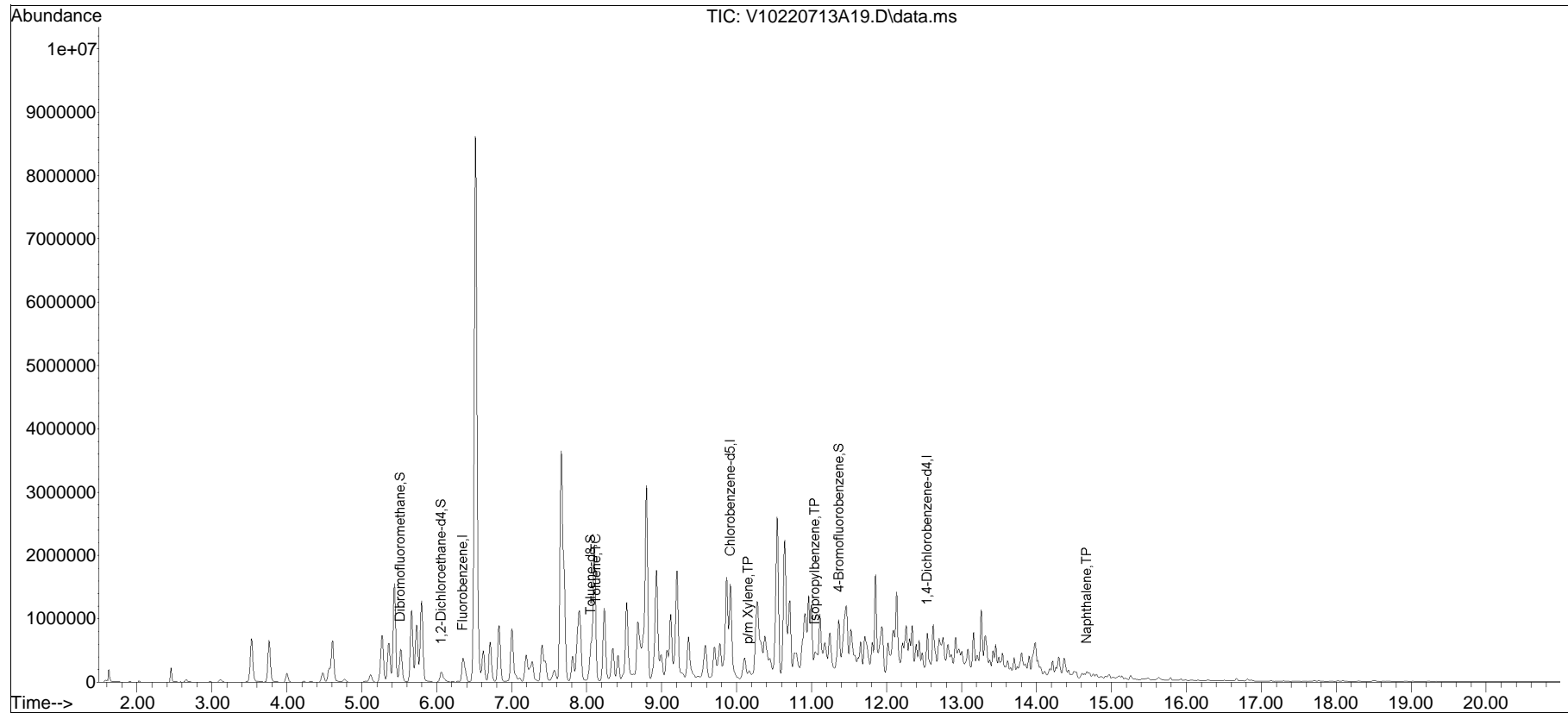


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220713A\
Data File : V10220713A19.D
Acq On : 13 Jul 2022 7:37 pm
Operator : VOA110:JC
Sample : 12236582-14D,31h,6.04,5,0.025,,a,r2f
Misc : WG1662896,ICAL18890
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Jul 14 09:25:20 2022
Quant Method : I:\VOLATILES\VOA110\2022\220713A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V10220713A01.D•

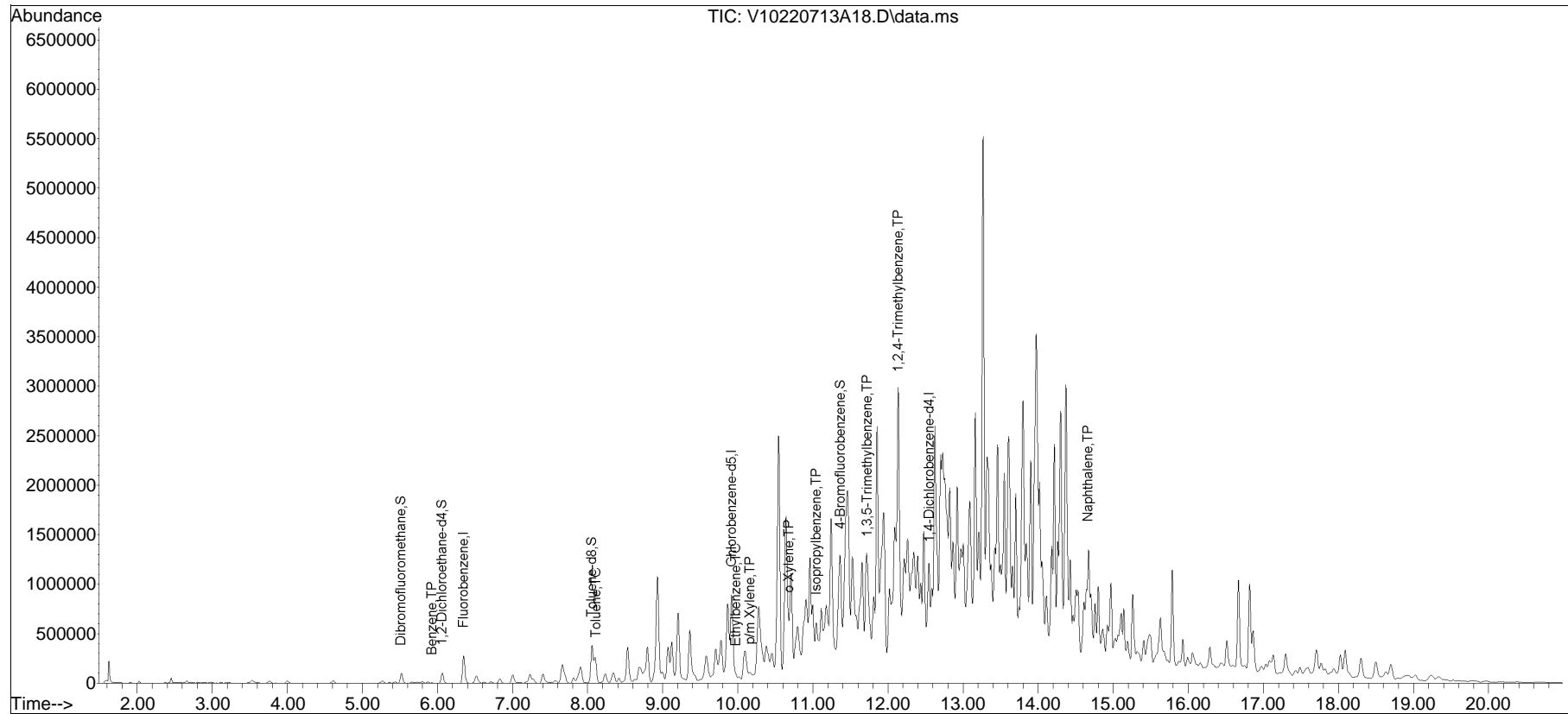


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220713A\
 Data File : V10220713A18.D
 Acq On : 13 Jul 2022 7:09 pm
 Operator : VOA110:JC
 Sample : 12236582-15D,31h,5.82,5,0.025,,a,r2f
 Misc : WG1662896,ICAL18890
 ALS Vial : 18 Sample Multiplier: 1

Quant Time: Jul 14 09:18:49 2022
 Quant Method : I:\VOLATILES\VOA110\2022\220713A\V110_220401N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Mon Apr 04 06:52:50 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V10220713A01.D•

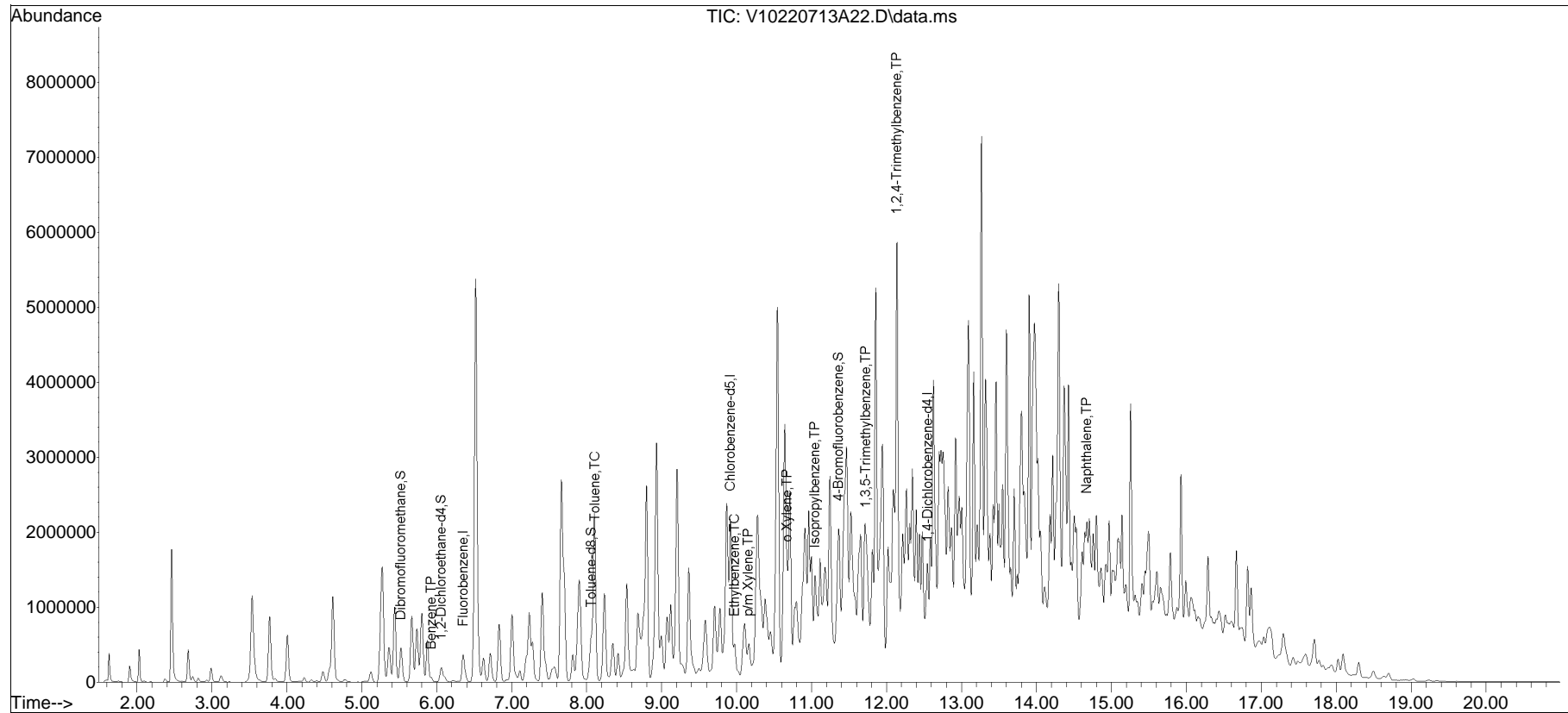


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220713A\
Data File : V10220713A22.D
Acq On : 13 Jul 2022 9:03 pm
Operator : VOA110:JC
Sample : 12236582-17,31,5.72,5,,b,r2f
Misc : WG1662895,ICAL18890
ALS Vial : 22 Sample Multiplier: 1

Quant Time: Jul 14 09:25:56 2022
Quant Method : I:\VOLATILES\VOA110\2022\220713A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list13A\V10220713A01.D•





ANALYTICAL REPORT

Lab Number:	L2236590
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/15/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236590

Report Date: 07/15/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236590-01	PB-840-01-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:45	07/08/22
L2236590-02	PB-840-02-SS01	SOIL	PHILADELPHIA, PA	07/08/22 09:50	07/08/22
L2236590-03	PB-840-03-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:00	07/08/22
L2236590-04	PB-840-04-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:10	07/08/22
L2236590-05	PB-840-05-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:20	07/08/22
L2236590-06	PB-840-06-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:30	07/08/22
L2236590-07	PB-840-07-SS01	SOIL	PHILADELPHIA, PA	07/08/22 10:40	07/08/22
L2236590-08	PB-840-08-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:20	07/08/22
L2236590-09	PB-840-09-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:30	07/08/22
L2236590-10	PB-840-10-SS01	SOIL	PHILADELPHIA, PA	07/08/22 11:40	07/08/22
L2236590-11	PB-840-11-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:00	07/08/22
L2236590-12	PB-840-12-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:10	07/08/22
L2236590-13	PB-840-13-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:20	07/08/22
L2236590-14	PB-840-14-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:30	07/08/22
L2236590-15	PB-840-15-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:40	07/08/22
L2236590-16	PB-840-16-SS01	SOIL	PHILADELPHIA, PA	07/08/22 12:50	07/08/22
L2236590-17	DUP-38	SOIL	PHILADELPHIA, PA	07/08/22 00:00	07/08/22
L2236590-18	FB-070822-3	WATER	PHILADELPHIA, PA	07/08/22 13:00	07/08/22
L2236590-19	FB-070822-4	WATER	PHILADELPHIA, PA	07/08/22 13:10	07/08/22
L2236590-20	TB-070822	WATER	PHILADELPHIA, PA	07/08/22 00:00	07/08/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2236590-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (141%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236590-15: The surrogate recovery is outside the acceptance criteria for 1,2-dichloroethane-d4 (67%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Total Metals

The WG1661456-4 Laboratory Duplicate RPD for lead (50%), performed on L2236590-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/15/22

ORGANICS



VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-01
 Client ID: PB-840-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:45
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 22:51
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0032	0.00032	1
Benzene	0.0060		mg/kg	0.00080	0.00027	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00041	1
Toluene	0.0026		mg/kg	0.0016	0.00087	1
1,2-Dibromoethane	ND		mg/kg	0.00080	0.00047	1
Ethylbenzene	0.00068	J	mg/kg	0.0016	0.00023	1
p/m-Xylene	0.0070		mg/kg	0.0032	0.00090	1
o-Xylene	0.0010	J	mg/kg	0.0016	0.00047	1
Xylenes, Total	0.0080	J	mg/kg	0.0016	0.00047	1
Isopropylbenzene	0.0092		mg/kg	0.0016	0.00018	1
1,3,5-Trimethylbenzene	0.0023	J	mg/kg	0.0032	0.00031	1
1,2,4-Trimethylbenzene	0.0014	J	mg/kg	0.0032	0.00054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	141	Q	70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-02
 Client ID: PB-840-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 02:06
 Analyst: JC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00021	J	mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	0.00019	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	0.0020		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0020		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00034	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0059		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.0035		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-03
 Client ID: PB-840-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 22:38
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.00028	J	mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	0.00015	J	mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	0.00062	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-04
 Client ID: PB-840-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 23:01
 Analyst: JC
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-05
 Client ID: PB-840-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:14
 Analyst: MKS
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00072	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00037	1
Toluene	ND		mg/kg	0.0014	0.00079	1
1,2-Dibromoethane	ND		mg/kg	0.00072	0.00042	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0029	0.00081	1
o-Xylene	ND		mg/kg	0.0014	0.00042	1
Xylenes, Total	ND		mg/kg	0.0014	0.00042	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00016	1
1,3,5-Trimethylbenzene	0.00047	J	mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-06
 Client ID: PB-840-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:37
 Analyst: MKS
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00058	J	mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	0.0016		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-07
 Client ID: PB-840-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 23:24
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00023	1
Benzene	0.023		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	0.00079	J	mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	0.016		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.043		mg/kg	0.0022	0.00063	1
o-Xylene	0.0011		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.044		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0020		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0056		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	0.019		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-08
 Client ID: PB-840-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 23:47
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	0.00069		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.00015	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	80		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09 D2
 Client ID: PB-840-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 01:09
 Analyst: MKS
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
1,2,4-Trimethylbenzene	92.		mg/kg	1.2	0.20	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	84		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09 D
 Client ID: PB-840-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 04:46
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.61	0.061	5
Benzene	4.4		mg/kg	0.15	0.050	5
1,2-Dichloroethane	ND		mg/kg	0.30	0.078	5
Toluene	0.30		mg/kg	0.30	0.16	5
1,2-Dibromoethane	ND		mg/kg	0.15	0.089	5
Ethylbenzene	66.		mg/kg	0.30	0.043	5
p/m-Xylene	160		mg/kg	0.61	0.17	5
o-Xylene	37.		mg/kg	0.30	0.089	5
Xylenes, Total	200		mg/kg	0.30	0.089	5
Isopropylbenzene	15.		mg/kg	0.30	0.033	5
1,3,5-Trimethylbenzene	33.		mg/kg	0.61	0.059	5
1,2,4-Trimethylbenzene	92.	E	mg/kg	0.61	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	111		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-10
 Client ID: PB-840-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 00:10
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.022		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	0.022		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0038		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	0.012		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-11
 Client ID: PB-840-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:59
 Analyst: MKS
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	0.0084		mg/kg	0.00039	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00078	0.00020	1
Toluene	ND		mg/kg	0.00078	0.00042	1
1,2-Dibromoethane	ND		mg/kg	0.00039	0.00023	1
Ethylbenzene	0.0097		mg/kg	0.00078	0.00011	1
p/m-Xylene	0.054		mg/kg	0.0016	0.00044	1
o-Xylene	0.0049		mg/kg	0.00078	0.00023	1
Xylenes, Total	0.059		mg/kg	0.00078	0.00023	1
Isopropylbenzene	0.0058		mg/kg	0.00078	0.00008	1
1,3,5-Trimethylbenzene	0.040		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	0.072		mg/kg	0.0016	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	124		70-130
Dibromofluoromethane	93		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-12
 Client ID: PB-840-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 00:33
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	89		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-13
 Client ID: PB-840-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 00:57
 Analyst: JC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-14
 Client ID: PB-840-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 01:20
 Analyst: JC
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-15
 Client ID: PB-840-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:22
 Analyst: MKS
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	67	Q	70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	84		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-16
 Client ID: PB-840-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:45
 Analyst: MKS
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	88		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-17
 Client ID: DUP-38
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 01:43
 Analyst: JC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00030	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00034	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-18
 Client ID: FB-070822-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:26
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-18
 Client ID: FB-070822-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 20:02
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	126		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-19
 Client ID: FB-070822-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:33
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-19
 Client ID: FB-070822-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 19:36
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	127		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-20
 Client ID: TB-070822
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:39
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-20
 Client ID: TB-070822
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 19:10
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	119		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/13/22 14:45
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 18-20 Batch: WG1662273-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/13/22 21:06
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02-04,07-08,10,12-14,17 Batch: WG1662979-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/13/22 21:06
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1662980-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/14/22 20:32
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,05-06,11,15-16 Batch: WG1663272-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/14/22 20:32
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09 Batch: WG1663273-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/13/22 17:26
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 18-20 Batch: WG1663309-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	119		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236590

Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 18-20 Batch: WG1662273-2									
1,2-Dibromoethane	110		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02-04,07-08,10,12-14,17 Batch: WG1662979-3 WG1662979-4								
Methyl tert butyl ether	90		90		66-130	0		30
Benzene	83		82		70-130	1		30
1,2-Dichloroethane	66	Q	66	Q	70-130	0		30
Toluene	81		78		70-130	4		30
1,2-Dibromoethane	90		89		70-130	1		30
Ethylbenzene	80		77		70-130	4		30
p/m-Xylene	85		81		70-130	5		30
o-Xylene	86		82		70-130	5		30
Isopropylbenzene	81		77		70-130	5		30
1,3,5-Trimethylbenzene	82		77		70-130	6		30
1,2,4-Trimethylbenzene	83		78		70-130	6		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	77		77		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1662980-3 WG1662980-4								
Methyl tert butyl ether	90		90		66-130	0		30
Benzene	83		82		70-130	1		30
1,2-Dichloroethane	66	Q	66	Q	70-130	0		30
Toluene	81		78		70-130	4		30
1,2-Dibromoethane	90		89		70-130	1		30
Ethylbenzene	80		77		70-130	4		30
p/m-Xylene	85		81		70-130	5		30
o-Xylene	86		82		70-130	5		30
Isopropylbenzene	81		77		70-130	5		30
1,3,5-Trimethylbenzene	82		77		70-130	6		30
1,2,4-Trimethylbenzene	83		78		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	77		77		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	95		94		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,05-06,11,15-16 Batch: WG1663272-3 WG1663272-4								
Methyl tert butyl ether	102		95		66-130	7		30
Benzene	95		94		70-130	1		30
1,2-Dichloroethane	71		71		70-130	0		30
Toluene	93		92		70-130	1		30
1,2-Dibromoethane	97		96		70-130	1		30
Ethylbenzene	92		91		70-130	1		30
p/m-Xylene	97		96		70-130	1		30
o-Xylene	97		94		70-130	3		30
Isopropylbenzene	97		97		70-130	0		30
1,3,5-Trimethylbenzene	94		95		70-130	1		30
1,2,4-Trimethylbenzene	95		94		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	77		76		70-130
Toluene-d8	96		97		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	95		91		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09 Batch: WG1663273-3 WG1663273-4								
Methyl tert butyl ether	102		95		66-130	7		30
Benzene	95		94		70-130	1		30
1,2-Dichloroethane	71		71		70-130	0		30
Toluene	93		92		70-130	1		30
1,2-Dibromoethane	97		96		70-130	1		30
Ethylbenzene	92		91		70-130	1		30
p/m-Xylene	97		96		70-130	1		30
o-Xylene	97		94		70-130	3		30
Isopropylbenzene	97		97		70-130	0		30
1,3,5-Trimethylbenzene	94		95		70-130	1		30
1,2,4-Trimethylbenzene	95		94		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	77		76		70-130
Toluene-d8	96		97		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	95		91		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 18-20 Batch: WG1663309-3 WG1663309-4								
Methyl tert butyl ether	95		97		63-130	2		20
Benzene	98		100		70-130	2		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	95		96		70-130	1		20
Ethylbenzene	94		96		70-130	2		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		92		70-130	4		20
1,3,5-Trimethylbenzene	91		95		64-130	4		20
1,2,4-Trimethylbenzene	90		94		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		105		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	102		94		70-130
Dibromofluoromethane	102		104		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-01
 Client ID: PB-840-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:45
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 08:06
 Analyst: SLR
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.046	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.19		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.21		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.15		mg/kg	0.12	0.022	1
Chrysene	0.22		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.18		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.15	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-02
 Client ID: PB-840-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 05:46
 Analyst: SLR
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	72		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-03
 Client ID: PB-840-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 04:35
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	66		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-04
 Client ID: PB-840-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 03:25
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	139	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-05
 Client ID: PB-840-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 10:27
 Analyst: SLR
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.075	J	mg/kg	0.18	0.022	1
Fluorene	0.023	J	mg/kg	0.18	0.017	1
Phenanthrene	0.073	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.056	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.030	J	mg/kg	0.11	0.020	1
Chrysene	0.056	J	mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.053	J	mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.025	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	126	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	76		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-06
 Client ID: PB-840-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 09:16
 Analyst: SLR
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.049	J	mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.018	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	130	Q	23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-07
 Client ID: PB-840-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 06:56
 Analyst: SLR
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	145	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-08
 Client ID: PB-840-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 06:32
 Analyst: SLR
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	76		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09
 Client ID: PB-840-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 10:50
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	10.	E	mg/kg	0.19	0.023	1
Fluorene	1.9		mg/kg	0.19	0.019	1
Phenanthrene	4.8		mg/kg	0.12	0.023	1
Anthracene	0.16		mg/kg	0.12	0.037	1
Pyrene	0.48		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.97		mg/kg	0.12	0.022	1
Chrysene	0.22		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.12		mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.096	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.072	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	235	Q	23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	57		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09 D
 Client ID: PB-840-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 16:11
 Analyst: JG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	9.3		mg/kg	1.9	0.23	10

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-10
 Client ID: PB-840-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 11:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 06:09
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	144	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-11
 Client ID: PB-840-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 09:40
 Analyst: SLR
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.090	J	mg/kg	0.20	0.024	1
Fluorene	0.072	J	mg/kg	0.20	0.019	1
Phenanthrene	0.18		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.031	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	0.041	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	124	Q	23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	72		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-12
 Client ID: PB-840-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 07:19
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	141	Q	23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	81		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-13
 Client ID: PB-840-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 07:42
 Analyst: SLR
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 20:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	77		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-14
 Client ID: PB-840-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 10:03
 Analyst: SLR
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 20:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	0.17		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.28		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.18		mg/kg	0.11	0.020	1
Chrysene	0.17		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.22		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.18		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.099	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	67		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-15
 Client ID: PB-840-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/12/22 07:42
 Analyst: CMM
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 20:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.091	J	mg/kg	0.18	0.022	1
Fluorene	0.050	J	mg/kg	0.18	0.017	1
Phenanthrene	0.41		mg/kg	0.11	0.022	1
Anthracene	0.11		mg/kg	0.11	0.035	1
Pyrene	0.68		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.48		mg/kg	0.11	0.020	1
Chrysene	0.44		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.57		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.46		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.22		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	79		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-16
 Client ID: PB-840-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 20:27
 Analyst: JG
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.14		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.18		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.12		mg/kg	0.11	0.021	1
Chrysene	0.13		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.18		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.14	J	mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.098	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	68		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-17
 Client ID: DUP-38
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 00:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/11/22 20:50
 Analyst: JG
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/10/22 16:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.045	J	mg/kg	0.19	0.023	1
Fluorene	0.052	J	mg/kg	0.19	0.018	1
Phenanthrene	0.39		mg/kg	0.11	0.023	1
Anthracene	0.092	J	mg/kg	0.11	0.036	1
Pyrene	0.53		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.44		mg/kg	0.11	0.021	1
Chrysene	0.43		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.52		mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.40		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	0.18		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	133	Q	23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-18
 Client ID: FB-070822-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:00
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/10/22 16:35
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	35	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-19
 Client ID: FB-070822-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 13:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/10/22 16:51
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	38	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/10/22 15:47
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/10/22 07:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 18-19 Batch: WG1660895-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	35		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	32	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/11/22 11:50
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 07/10/22 16:16

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 16-17 Batch: WG1660990-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	58		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/12/22 01:51
Analyst: SLR

Extraction Method: EPA 3546
Extraction Date: 07/10/22 19:50

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-15 Batch: WG1661021-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	76		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 18-19 Batch: WG1660895-2 WG1660895-3								
Naphthalene	50		50		40-140	0		40
Fluorene	48		46		40-140	4		40
Phenanthrene	46		44		40-140	4		40
Anthracene	47		45		40-140	4		40
Pyrene	54		50		26-127	8		40
Benzo(a)anthracene	43		40		40-140	7		40
Chrysene	46		45		40-140	2		40
Benzo(b)fluoranthene	48		45		40-140	6		40
Benzo(a)pyrene	45		41		40-140	9		40
Benzo(ghi)perylene	50		47		40-140	6		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	27		26		23-120
2-Fluorobiphenyl	25		24		15-120
4-Terphenyl-d14	27	Q	25	Q	41-149

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 16-17 Batch: WG1660990-2 WG1660990-3								
Naphthalene	57		63		40-140	10		50
Fluorene	64		68		40-140	6		50
Phenanthrene	60		65		40-140	8		50
Anthracene	62		67		40-140	8		50
Pyrene	60		65		35-142	8		50
Benzo(a)anthracene	67		71		40-140	6		50
Chrysene	64		70		40-140	9		50
Benzo(b)fluoranthene	66		76		40-140	14		50
Benzo(a)pyrene	74		75		40-140	1		50
Benzo(ghi)perylene	54		67		40-140	21		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	107		126	Q	23-120
2-Fluorobiphenyl	54		58		30-120
4-Terphenyl-d14	59		65		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-15 Batch: WG1661021-2 WG1661021-3								
Naphthalene	73		64		40-140	13		50
Fluorene	81		70		40-140	15		50
Phenanthrene	78		68		40-140	199	Q	50
Anthracene	79		69		40-140	14		50
Pyrene	79		68		35-142	15		50
Benzo(a)anthracene	85		74		40-140	14		50
Chrysene	84		72		40-140	15		50
Benzo(b)fluoranthene	93		81		40-140	14		50
Benzo(a)pyrene	91		78		40-140	15		50
Benzo(ghi)perylene	81		69		40-140	16		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	131	Q	113		23-120
2-Fluorobiphenyl	69		60		30-120
4-Terphenyl-d14	79		71		18-120



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-01

Date Collected: 07/08/22 09:45

Client ID: PB-840-01-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	19.2		mg/kg	4.58	0.246	2	07/12/22 12:36	07/15/22 10:51	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-02
 Client ID: PB-840-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:50
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.66		mg/kg	2.26	0.121	1	07/12/22 12:36	07/15/22 08:26	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-03

Date Collected: 07/08/22 10:00

Client ID: PB-840-03-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.92		mg/kg	2.29	0.123	1	07/12/22 12:36	07/15/22 08:31	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-04
 Client ID: PB-840-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:10
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	10.9		mg/kg	2.02	0.108	1	07/12/22 12:36	07/15/22 09:07	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-05
 Client ID: PB-840-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:20
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	103		mg/kg	2.12	0.113	1	07/12/22 12:36	07/15/22 09:12	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-06
 Client ID: PB-840-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.05		mg/kg	2.20	0.118	1	07/12/22 12:36	07/15/22 09:16	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-07
 Client ID: PB-840-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 10:40
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.94		mg/kg	2.26	0.121	1	07/12/22 12:36	07/15/22 09:21	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-08

Date Collected: 07/08/22 11:20

Client ID: PB-840-08-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.75		mg/kg	2.33	0.125	1	07/12/22 12:36	07/15/22 09:25	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-09

Date Collected: 07/08/22 11:30

Client ID: PB-840-09-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.30		mg/kg	2.27	0.122	1	07/12/22 12:36	07/15/22 09:30	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-10

Date Collected: 07/08/22 11:40

Client ID: PB-840-10-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.38		mg/kg	2.25	0.120	1	07/12/22 12:36	07/15/22 09:35	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-11

Date Collected: 07/08/22 12:00

Client ID: PB-840-11-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.06		mg/kg	2.36	0.127	1	07/12/22 12:36	07/15/22 09:39	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-12

Date Collected: 07/08/22 12:10

Client ID: PB-840-12-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.21		mg/kg	2.26	0.121	1	07/12/22 12:36	07/15/22 09:44	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-13

Date Collected: 07/08/22 12:20

Client ID: PB-840-13-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.78		mg/kg	2.10	0.113	1	07/12/22 12:36	07/15/22 09:48	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-14
 Client ID: PB-840-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:30
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	44.4		mg/kg	2.09	0.112	1	07/12/22 12:36	07/15/22 10:28	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-15

Date Collected: 07/08/22 12:40

Client ID: PB-840-15-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	49.2		mg/kg	4.30	0.231	2	07/12/22 12:36	07/15/22 15:11	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-16

Date Collected: 07/08/22 12:50

Client ID: PB-840-16-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	53.1		mg/kg	2.22	0.119	1	07/12/22 12:36	07/15/22 10:37	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-17

Date Collected: 07/08/22 00:00

Client ID: DUP-38

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	36.7		mg/kg	2.20	0.118	1	07/12/22 12:36	07/15/22 10:42	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-18

Date Collected: 07/08/22 13:00

Client ID: FB-070822-3

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 10:41	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-19

Date Collected: 07/08/22 13:10

Client ID: FB-070822-4

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 10:46	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 18-19 Batch: WG1660944-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/11/22 09:35	07/12/22 09:42	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-17 Batch: WG1661456-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/12/22 12:36	07/15/22 08:17	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 Batch: WG1660944-2								
Lead, Total	100		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-17 Batch: WG1661456-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 QC Batch ID: WG1660944-3 QC Sample: L2236582-18 Client ID: MS Sample												
Lead, Total	ND	530	536.0	101		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG1661456-3 QC Sample: L2236590-01 Client ID: PB-840-01-SS01												
Lead, Total	19.2	48.2	57.6	80		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236590

Report Date: 07/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 18-19 QC Batch ID: WG1660944-4 QC Sample: L2236582-18 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-17 QC Batch ID: WG1661456-4 QC Sample: L2236590-01 Client ID: PB-840-01-SS01						
Lead, Total	19.2	32.1	mg/kg	50	Q	20

INORGANICS & MISCELLANEOUS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-01
 Client ID: PB-840-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 09:45
 Date Received: 07/08/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.8		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-02

Date Collected: 07/08/22 09:50

Client ID: PB-840-02-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-03

Date Collected: 07/08/22 10:00

Client ID: PB-840-03-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-04

Date Collected: 07/08/22 10:10

Client ID: PB-840-04-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.3		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-05

Date Collected: 07/08/22 10:20

Client ID: PB-840-05-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.8		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-06

Date Collected: 07/08/22 10:30

Client ID: PB-840-06-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-07

Date Collected: 07/08/22 10:40

Client ID: PB-840-07-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-08

Date Collected: 07/08/22 11:20

Client ID: PB-840-08-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.5		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-09

Date Collected: 07/08/22 11:30

Client ID: PB-840-09-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**SAMPLE RESULTS**

Lab ID: L2236590-10

Date Collected: 07/08/22 11:40

Client ID: PB-840-10-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.3		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-11
Client ID: PB-840-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/08/22 12:00
Date Received: 07/08/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-12

Date Collected: 07/08/22 12:10

Client ID: PB-840-12-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-13

Date Collected: 07/08/22 12:20

Client ID: PB-840-13-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.7		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-14

Date Collected: 07/08/22 12:30

Client ID: PB-840-14-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-15

Date Collected: 07/08/22 12:40

Client ID: PB-840-15-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-16

Date Collected: 07/08/22 12:50

Client ID: PB-840-16-SS01

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

SAMPLE RESULTS

Lab ID: L2236590-17

Date Collected: 07/08/22 00:00

Client ID: DUP-38

Date Received: 07/08/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.2		%	0.100	NA	1	-	07/11/22 19:55	121,2540G	MF



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236590

Report Date: 07/15/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-17 QC Batch ID: WG1661481-1 QC Sample: L2236590-01 Client ID: PB-840-01-SS01						
Solids, Total	82.8	82.6	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-01A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-01B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-01C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-01D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-01F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-02A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-02B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-02C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-02D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-02F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-03A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-03B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-03C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-03D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-03F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-04A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-04B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-04C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-04D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-04F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-05A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-05B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-05C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-05D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-05F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-06A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-06B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-06C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-06D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-06F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-07A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-07B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-07C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-07D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-07F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-08A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-08B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-08C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-08D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-08F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-09A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-09B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-09C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-09D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-09F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-10A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-10B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-10C	Vial water preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-10D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-10F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-11A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-11B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-11C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-11D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-11F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-12A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-12B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-12C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-12D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-12F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-13A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-13B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-13C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-13D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-13E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-13F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236590**Project Number:** 200.00135.006**Report Date:** 07/15/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-14A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-14B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-14C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-14D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-14E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-14F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-15A	Vial MeOH preserved	A	NA		2.4	Y	Absent		PA-8260HLW(14)
L2236590-15B	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-15C	Vial water preserved	A	NA		2.4	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-15D	Plastic 2oz unpreserved for TS	A	NA		2.4	Y	Absent		TS(7)
L2236590-15E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.4	Y	Absent		PB-TI(180)
L2236590-15F	Glass 120ml/4oz unpreserved	A	NA		2.4	Y	Absent		PA-PAH(14)
L2236590-16A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-16B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-16C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-16D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-16E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-16F	Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-16G	Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-17A	Vial MeOH preserved	B	NA		5.8	Y	Absent		PA-8260HLW(14)
L2236590-17B	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 13:43	PA-8260HLW(14)
L2236590-17C	Vial water preserved	B	NA		5.8	Y	Absent	09-JUL-22 12:49	PA-8260HLW(14)
L2236590-17D	Plastic 2oz unpreserved for TS	B	NA		5.8	Y	Absent		TS(7)
L2236590-17E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		5.8	Y	Absent		PB-TI(180)
L2236590-17F	Glass 120ml/4oz unpreserved	B	NA		5.8	Y	Absent		PA-PAH(14)
L2236590-18A	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-18B	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-18C	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236590-18D	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		PB-6020T-PPB(180)
L2236590-18E	Amber 250ml unpreserved	A	7	7	2.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236590-18F	Amber 250ml unpreserved	A	7	7	2.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236590-19A	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-19B	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-19C	Vial HCl preserved	A	NA		2.4	Y	Absent		8011(14),PA-8260(14)
L2236590-19D	Plastic 250ml HNO3 preserved	A	<2	<2	2.4	Y	Absent		PB-6020T-PPB(180)
L2236590-19E	Amber 250ml unpreserved	A	7	7	2.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236590-19F	Amber 250ml unpreserved	A	7	7	2.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236590-20A	Vial HCl preserved	B	NA		5.8	Y	Absent		8011(14),PA-8260(14)
L2236590-20B	Vial HCl preserved	B	NA		5.8	Y	Absent		8011(14),PA-8260(14)
L2236590-20C	Vial Na2S2O3 preserved	NA	NA			Y	Absent		-



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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236590
Report Date: 07/15/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236590

Project Number: 200.00135.006

Report Date: 07/15/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

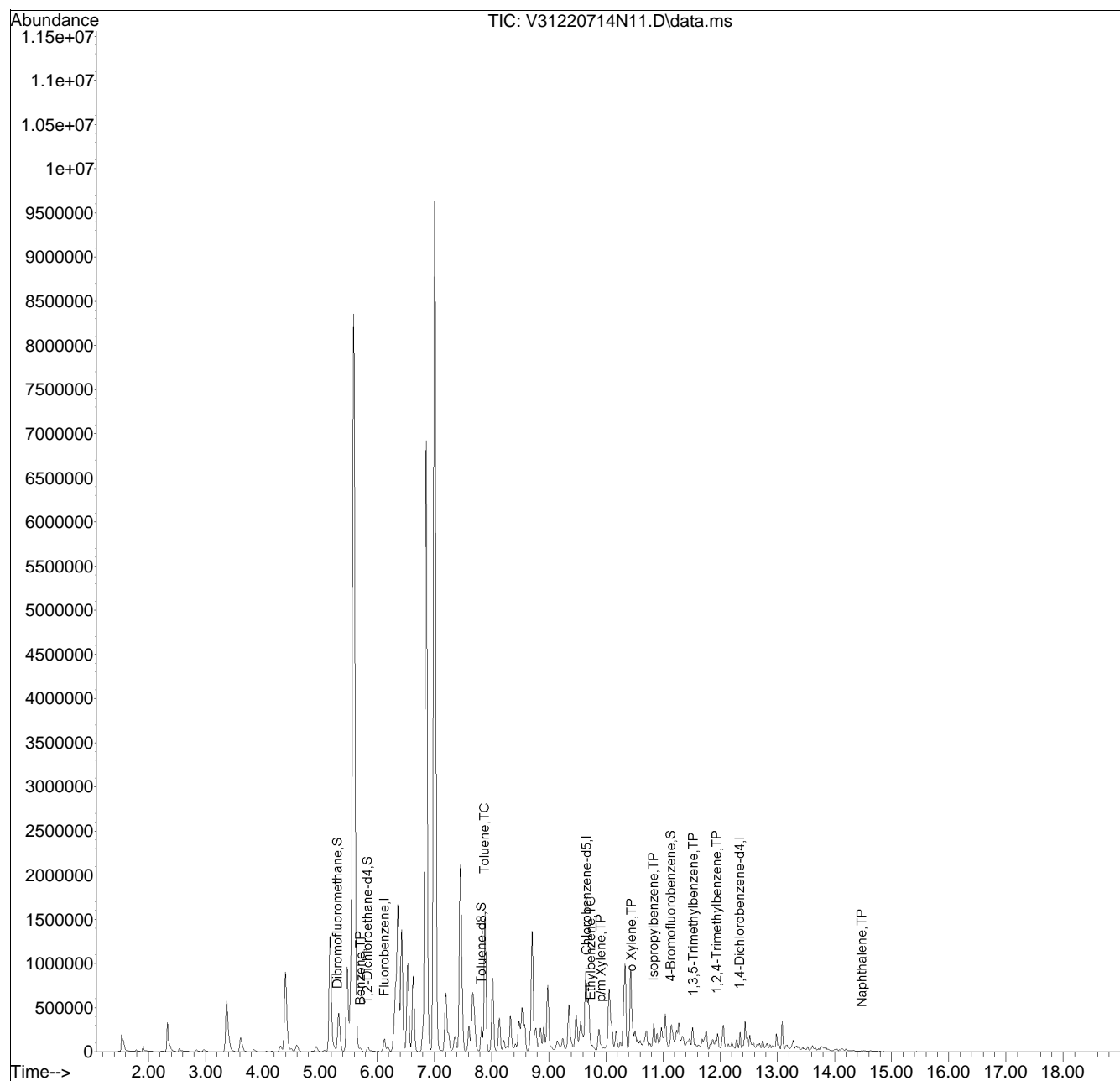
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\220714N\
 Data File : V31220714N1.D
 Acq On : 14 Jul 2022 10:51 pm
 Operator : VOA131:MKS
 Sample : 12236590-01,31,3.76,5,,b,r2f
 Misc : WG1663272,ICAL19050
 ALS Vial : 11 Sample Multiplier: 1

Quant Time: Jul 15 08:04:31 2022
 Quant Method : I:\VOLATILES\VOA131\2022\220714N\V31_220525N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Tue May 31 11:11:48 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14N\V31220714N01.D•

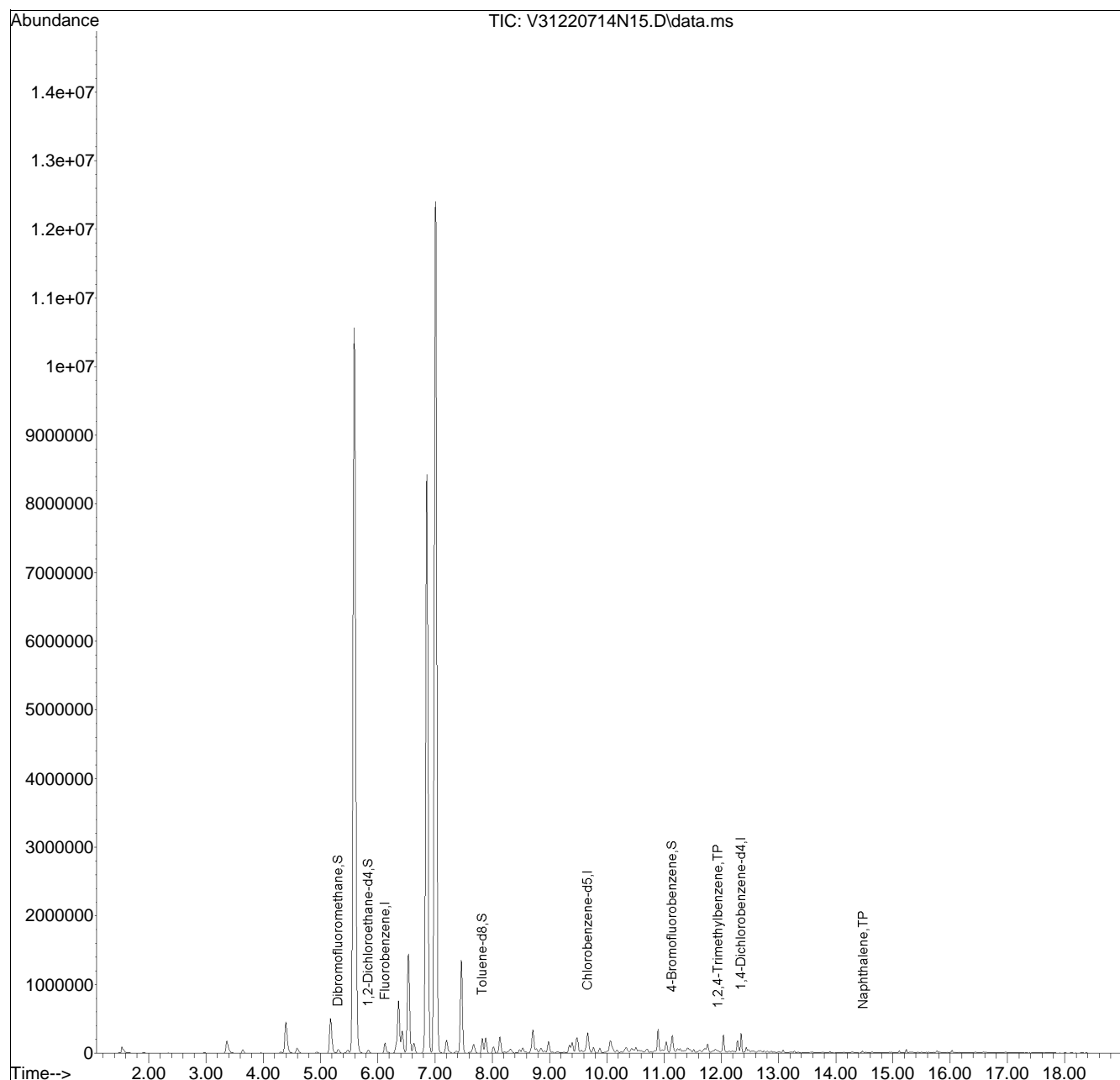


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA131\2022\220714N\
Data File : V31220714N15.D
Acq On : 15 Jul 2022 12:22 am
Operator : VOA131:MKS
Sample : 12236590-15,31,4.91,5,,b,r2f
Misc : WG1663272,ICAL19050
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Jul 15 08:05:32 2022
Quant Method : I:\VOLATILES\VOA131\2022\220714N\V31_220525N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 31 11:11:48 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14N\V31220714N01.D•





ANALYTICAL REPORT

Lab Number:	L2236779
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/18/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236779

Report Date: 07/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236779-01	PB-848-01-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:00	07/11/22
L2236779-02	PB-848-02-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:10	07/11/22
L2236779-03	PB-848-03-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:20	07/11/22
L2236779-04	PB-848-04-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:30	07/11/22
L2236779-05	PB-848-05-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:40	07/11/22
L2236779-06	PB-848-06-SS01	SOIL	PHILADELPHIA, PA	07/11/22 09:50	07/11/22
L2236779-07	PB-848-07-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:00	07/11/22
L2236779-08	PB-848-08-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:10	07/11/22
L2236779-09	PB-848-09-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:20	07/11/22
L2236779-10	PB-848-10-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:30	07/11/22
L2236779-11	PB-848-11-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:40	07/11/22
L2236779-12	PB-848-12-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:50	07/11/22
L2236779-13	PB-848-13-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:00	07/11/22
L2236779-14	PB-848-14-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:10	07/11/22
L2236779-15	PB-848-15-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:20	07/11/22
L2236779-16	PB-848-16-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:30	07/11/22
L2236779-17	PB-848-17-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:40	07/11/22
L2236779-18	PB-848-18-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:50	07/11/22
L2236779-19	FB-071122-1	WATER	PHILADELPHIA, PA	07/11/22 14:00	07/11/22
L2236779-20	FB-071122-2	WATER	PHILADELPHIA, PA	07/11/22 14:05	07/11/22
L2236779-21	DUP-39	SOIL	PHILADELPHIA, PA	07/11/22 00:00	07/11/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2236779-04D: The sample has elevated detection limits due to the dilution required by the elevated concentrations of non-target compounds in the sample.

L2236779-04D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (144%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-06: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (211%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-07: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

L2236779-07(Low): The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-09: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (139%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-11: The sample was analyzed as a High Level Methanol based upon screen results. The sample was then analyzed as a Low Level in order to achieve lower reporting limits. The results of both analyses are reported. Differences were noted between the results of the analyses which have been attributed to vial discrepancies.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Case Narrative (continued)

L2236779-11: The internal standard (IS) response(s) for fluorobenzene (223%) was above the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was above method criteria all associated compounds are considered to have a potentially low bias.

L2236779-11: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (199%); however, low-level re-analysis was not performed due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. A high-level analysis was performed, and those results are also reported.

L2236779-11: The surrogate recovery is outside the method acceptance criteria for dibromofluoromethane (56%) due to interference with the Internal Standard.

L2236779-13: The analysis of Volatile Organics by EPA Method 5035/8260 Low Level could not be performed due to the elevated concentrations of non-target compounds in the sample.

L2236779-13: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (153%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-15: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (138%); due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236779-18: The internal standard (IS) response(s) for fluorobenzene (422%) and the surrogate recoveries for dibromofluoromethane (27%) and 4-bromofluorobenzene (262%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was above method criteria, all associated compounds are considered to have a potentially low bias. A high-level analysis was performed, and those results are also reported.

Total Metals

L2236779-02, -03, -05, -07, -08, -10 and -18: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Case Narrative (continued)

The WG1661857-3 MS recovery, performed on L2236779-01, is outside the acceptance criteria for lead (74%). A post digestion spike was performed and yielded an unacceptable recovery for lead (69%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/18/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-01
 Client ID: PB-848-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 09:41
 Analyst: MKS
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.0010		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	0.0010	J	mg/kg	0.0023	0.00065	1
o-Xylene	0.00055	J	mg/kg	0.0012	0.00034	1
Xylenes, Total	0.0016	J	mg/kg	0.0012	0.00034	1
Isopropylbenzene	0.00014	J	mg/kg	0.0012	0.00012	1
1,3,5-Trimethylbenzene	0.00026	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-02
 Client ID: PB-848-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 11:06
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00027	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00052	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-03
 Client ID: PB-848-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 11:35
 Analyst: JC
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-04 D
 Client ID: PB-848-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 12:04
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.51	0.051	4
Benzene	1.8		mg/kg	0.13	0.042	4
1,2-Dichloroethane	ND		mg/kg	0.25	0.065	4
Toluene	ND		mg/kg	0.25	0.14	4
1,2-Dibromoethane	ND		mg/kg	0.13	0.074	4
Ethylbenzene	0.90		mg/kg	0.25	0.036	4
p/m-Xylene	3.5		mg/kg	0.51	0.14	4
o-Xylene	0.32		mg/kg	0.25	0.074	4
Xylenes, Total	3.8		mg/kg	0.25	0.074	4
Isopropylbenzene	0.46		mg/kg	0.25	0.028	4
1,3,5-Trimethylbenzene	2.7		mg/kg	0.51	0.049	4
1,2,4-Trimethylbenzene	4.3		mg/kg	0.51	0.085	4

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	144	Q	70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-05
 Client ID: PB-848-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 12:33
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00074	J	mg/kg	0.0022	0.00023	1
Benzene	ND		mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-06
 Client ID: PB-848-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:28
 Analyst: LAC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.064	0.016	1
Toluene	ND		mg/kg	0.064	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	1.0		mg/kg	0.064	0.0090	1
p/m-Xylene	ND		mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.064	0.019	1
Xylenes, Total	ND		mg/kg	0.064	0.019	1
Isopropylbenzene	3.0		mg/kg	0.064	0.0070	1
1,3,5-Trimethylbenzene	0.16		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	31.	E	mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	211	Q	70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-06 D
 Client ID: PB-848-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 13:02
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
1,2,4-Trimethylbenzene	35.		mg/kg	1.3	0.21	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-07
 Client ID: PB-848-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:55
 Analyst: LAC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.014	1
Benzene	0.14		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.067	0.017	1
Toluene	0.087		mg/kg	0.067	0.036	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	1.6		mg/kg	0.067	0.0095	1
p/m-Xylene	0.53		mg/kg	0.13	0.038	1
o-Xylene	0.032	J	mg/kg	0.067	0.020	1
Xylenes, Total	0.56	J	mg/kg	0.067	0.020	1
Isopropylbenzene	1.1		mg/kg	0.067	0.0073	1
1,3,5-Trimethylbenzene	1.0		mg/kg	0.13	0.013	1
1,2,4-Trimethylbenzene	2.2		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-07
 Client ID: PB-848-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 09:20
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00055	J	mg/kg	0.0018	0.00018	1
Benzene	0.016		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	0.0027		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	0.19		mg/kg	0.00089	0.00012	1
p/m-Xylene	0.033		mg/kg	0.0018	0.00050	1
o-Xylene	0.0021		mg/kg	0.00089	0.00026	1
Xylenes, Total	0.035		mg/kg	0.00089	0.00026	1
Isopropylbenzene	0.11		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	0.089		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.19		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	124		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	85		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-08
 Client ID: PB-848-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 14:10
 Analyst: LAC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00030	J	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.0067		mg/kg	0.00092	0.00013	1
p/m-Xylene	0.00093	J	mg/kg	0.0018	0.00052	1
o-Xylene	0.00040	J	mg/kg	0.00092	0.00027	1
Xylenes, Total	0.0013	J	mg/kg	0.00092	0.00027	1
Isopropylbenzene	0.0099		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	0.0047		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.037		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-09
 Client ID: PB-848-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 14:36
 Analyst: LAC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00022	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	0.00046	J	mg/kg	0.00098	0.00014	1
p/m-Xylene	0.00064	J	mg/kg	0.0020	0.00055	1
o-Xylene	0.00029	J	mg/kg	0.00098	0.00029	1
Xylenes, Total	0.00093	J	mg/kg	0.00098	0.00029	1
Isopropylbenzene	0.0011		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	0.00028	J	mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.0013	J	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	139	Q	70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-10
 Client ID: PB-848-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 14:59
 Analyst: JC
 Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	0.00052	J	mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.0024		mg/kg	0.0012	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00070	1
o-Xylene	ND		mg/kg	0.0012	0.00037	1
Xylenes, Total	ND		mg/kg	0.0012	0.00037	1
Isopropylbenzene	0.0066		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	0.00047	J	mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.00081	J	mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-11
 Client ID: PB-848-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 15:29
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.87		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.068	0.017	1
Toluene	0.12		mg/kg	0.068	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	0.16		mg/kg	0.068	0.0095	1
p/m-Xylene	0.36		mg/kg	0.14	0.038	1
o-Xylene	0.034	J	mg/kg	0.068	0.020	1
Xylenes, Total	0.39	J	mg/kg	0.068	0.020	1
Isopropylbenzene	0.29		mg/kg	0.068	0.0074	1
1,3,5-Trimethylbenzene	0.076	J	mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	0.12	J	mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	110		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-11
 Client ID: PB-848-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:02
 Analyst: LAC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	0.0039		mg/kg	0.00068	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	0.0059		mg/kg	0.0014	0.00074	1
1,2-Dibromoethane	ND		mg/kg	0.00068	0.00040	1
Ethylbenzene	0.0015		mg/kg	0.0014	0.00019	1
p/m-Xylene	0.018		mg/kg	0.0027	0.00076	1
o-Xylene	0.0043		mg/kg	0.0014	0.00039	1
Xylenes, Total	0.022		mg/kg	0.0014	0.00039	1
Isopropylbenzene	0.14		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	0.0018	J	mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	0.0038		mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	123		70-130
4-Bromofluorobenzene	199	Q	70-130
Dibromofluoromethane	56	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-12
 Client ID: PB-848-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:43
 Analyst: LAC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-13
 Client ID: PB-848-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 16:28
 Analyst: JC
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	ND		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.072	0.018	1
Toluene	0.039	J	mg/kg	0.072	0.039	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.018	J	mg/kg	0.072	0.010	1
p/m-Xylene	ND		mg/kg	0.14	0.040	1
o-Xylene	ND		mg/kg	0.072	0.021	1
Xylenes, Total	ND		mg/kg	0.072	0.021	1
Isopropylbenzene	0.010	J	mg/kg	0.072	0.0078	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	153	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-14
 Client ID: PB-848-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 16:56
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00019	J	mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	0.00017	J	mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.00079	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-15
 Client ID: PB-848-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 16:21
 Analyst: LAC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	1.1		mg/kg	0.028	0.0092	1
1,2-Dichloroethane	ND		mg/kg	0.055	0.014	1
Toluene	0.078		mg/kg	0.055	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.028	0.016	1
Ethylbenzene	16.		mg/kg	0.055	0.0078	1
p/m-Xylene	34.	E	mg/kg	0.11	0.031	1
o-Xylene	0.038	J	mg/kg	0.055	0.016	1
Isopropylbenzene	2.4		mg/kg	0.055	0.0060	1
1,3,5-Trimethylbenzene	4.0		mg/kg	0.11	0.011	1
1,2,4-Trimethylbenzene	7.7		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	138	Q	70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-15 D
 Client ID: PB-848-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 17:25
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
p/m-Xylene	38.		mg/kg	2.2	0.62	20
Xylenes, Total	38.	J	mg/kg	0.055	0.016	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	114		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	91		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-16
 Client ID: PB-848-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 17:54
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-17
 Client ID: PB-848-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 18:22
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0031	0.00031	1
Benzene	ND		mg/kg	0.00077	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00040	1
Toluene	ND		mg/kg	0.0015	0.00084	1
1,2-Dibromoethane	ND		mg/kg	0.00077	0.00045	1
Ethylbenzene	ND		mg/kg	0.0015	0.00022	1
p/m-Xylene	ND		mg/kg	0.0031	0.00087	1
o-Xylene	ND		mg/kg	0.0015	0.00045	1
Xylenes, Total	ND		mg/kg	0.0015	0.00045	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0031	0.00030	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0031	0.00052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-18
 Client ID: PB-848-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:17
 Analyst: LAC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00091		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	0.0043		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	0.0057		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.026		mg/kg	0.0020	0.00057	1
o-Xylene	0.0084		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.034		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.037		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.0051		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.030		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	262	Q	70-130
Dibromofluoromethane	27	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-18
 Client ID: PB-848-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 10:54
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	0.010	J	mg/kg	0.027	0.0089	1
1,2-Dichloroethane	ND		mg/kg	0.054	0.014	1
Toluene	ND		mg/kg	0.054	0.029	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	0.017	J	mg/kg	0.054	0.0076	1
p/m-Xylene	0.056	J	mg/kg	0.11	0.030	1
o-Xylene	ND		mg/kg	0.054	0.016	1
Xylenes, Total	0.056	J	mg/kg	0.054	0.016	1
Isopropylbenzene	0.060		mg/kg	0.054	0.0058	1
1,3,5-Trimethylbenzene	0.011	J	mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	0.058	J	mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-19
 Client ID: FB-071122-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:46
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-19
 Client ID: FB-071122-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 21:45
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	130		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-20
 Client ID: FB-071122-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:05
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 16:53
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-20
 Client ID: FB-071122-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:05
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 22:11
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	130		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-21
 Client ID: DUP-39
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 12:50
 Analyst: LAC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00057	J	mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/13/22 14:45
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-20 Batch: WG1662273-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/14/22 09:12
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 04,06,11,13,15 Batch: WG1662882-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	95		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/13/22 17:26
 Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1663309-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	119		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/14/22 09:12
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03,05,10,14,16-17 Batch: WG1663423-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	95		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 11:31
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 06-07,15 Batch: WG1663910-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 11:31
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 08-09,11-12,18,21 Batch: WG1663911-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/18/22 08:56
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07 Batch: WG1664169-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/18/22 08:56
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 18 Batch: WG1664170-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 19-20 Batch: WG1662273-2									
1,2-Dibromoethane	110		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04,06,11,13,15 Batch: WG1662882-3 WG1662882-4								
Methyl tert butyl ether	118		118		66-130	0		30
Benzene	106		109		70-130	3		30
1,2-Dichloroethane	100		101		70-130	1		30
Toluene	108		108		70-130	0		30
1,2-Dibromoethane	108		108		70-130	0		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	106		107		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	113		112		70-130	1		30
1,3,5-Trimethylbenzene	109		108		70-130	1		30
1,2,4-Trimethylbenzene	110		109		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	103		102		70-130
4-Bromofluorobenzene	109		107		70-130
Dibromofluoromethane	92		92		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1663309-3 WG1663309-4								
Methyl tert butyl ether	95		97		63-130	2		20
Benzene	98		100		70-130	2		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	95		96		70-130	1		20
Ethylbenzene	94		96		70-130	2		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		92		70-130	4		20
1,3,5-Trimethylbenzene	91		95		64-130	4		20
1,2,4-Trimethylbenzene	90		94		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		105		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	102		94		70-130
Dibromofluoromethane	102		104		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03,05,10,14,16-17 Batch: WG1663423-3 WG1663423-4								
Methyl tert butyl ether	118		118		66-130	0		30
Benzene	106		109		70-130	3		30
1,2-Dichloroethane	100		101		70-130	1		30
Toluene	108		108		70-130	0		30
1,2-Dibromoethane	108		108		70-130	0		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	106		107		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	113		112		70-130	1		30
1,3,5-Trimethylbenzene	109		108		70-130	1		30
1,2,4-Trimethylbenzene	110		109		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	103		102		70-130
4-Bromofluorobenzene	109		107		70-130
Dibromofluoromethane	91		92		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 06-07,15 Batch: WG1663910-3 WG1663910-4								
Methyl tert butyl ether	84		81		66-130	4		30
Benzene	84		79		70-130	6		30
1,2-Dichloroethane	84		81		70-130	4		30
Toluene	84		79		70-130	6		30
1,2-Dibromoethane	92		87		70-130	6		30
Ethylbenzene	84		79		70-130	6		30
p/m-Xylene	89		83		70-130	7		30
o-Xylene	87		83		70-130	5		30
Isopropylbenzene	82		78		70-130	5		30
1,3,5-Trimethylbenzene	82		79		70-130	4		30
1,2,4-Trimethylbenzene	81		78		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	99		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	83		84		70-130
Dibromofluoromethane	106		103		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 08-09,11-12,18,21 Batch: WG1663911-3 WG1663911-4								
Methyl tert butyl ether	84		81		66-130	4		30
Benzene	84		79		70-130	6		30
1,2-Dichloroethane	84		81		70-130	4		30
Toluene	84		79		70-130	6		30
1,2-Dibromoethane	92		87		70-130	6		30
Ethylbenzene	84		79		70-130	6		30
p/m-Xylene	89		83		70-130	7		30
o-Xylene	87		83		70-130	5		30
Isopropylbenzene	82		78		70-130	5		30
1,3,5-Trimethylbenzene	82		79		70-130	4		30
1,2,4-Trimethylbenzene	81		78		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	99		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	83		83		70-130
Dibromofluoromethane	106		103		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07 Batch: WG1664169-3 WG1664169-4								
Methyl tert butyl ether	103		90		66-130	13		30
Benzene	91		87		70-130	4		30
1,2-Dichloroethane	69	Q	69	Q	70-130	0		30
Toluene	90		83		70-130	8		30
1,2-Dibromoethane	94		90		70-130	4		30
Ethylbenzene	88		83		70-130	6		30
p/m-Xylene	91		88		70-130	3		30
o-Xylene	90		87		70-130	3		30
Isopropylbenzene	89		81		70-130	9		30
1,3,5-Trimethylbenzene	88		81		70-130	8		30
1,2,4-Trimethylbenzene	88		82		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	78		78		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	92		92		70-130
Dibromofluoromethane	93		91		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 18 Batch: WG1664170-3 WG1664170-4								
Methyl tert butyl ether	103		90		66-130	13		30
Benzene	91		87		70-130	4		30
1,2-Dichloroethane	69	Q	69	Q	70-130	0		30
Toluene	90		83		70-130	8		30
1,2-Dibromoethane	94		90		70-130	4		30
Ethylbenzene	88		83		70-130	6		30
p/m-Xylene	91		88		70-130	3		30
o-Xylene	90		87		70-130	3		30
Isopropylbenzene	89		81		70-130	9		30
1,3,5-Trimethylbenzene	88		81		70-130	8		30
1,2,4-Trimethylbenzene	88		82		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	78		78		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	92		92		70-130
Dibromofluoromethane	93		91		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-01
 Client ID: PB-848-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 12:16
 Analyst: CMM
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	90		30-120
4-Terphenyl-d14	100		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-02
 Client ID: PB-848-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 12:40
 Analyst: CMM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	0.029	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-03
 Client ID: PB-848-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 13:04
 Analyst: CMM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.024	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	83		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-04
 Client ID: PB-848-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 13:29
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.4		mg/kg	0.20	0.025	1
Fluorene	2.3		mg/kg	0.20	0.020	1
Phenanthrene	1.9		mg/kg	0.12	0.025	1
Anthracene	0.29		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-05
 Client ID: PB-848-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 13:53
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.034	J	mg/kg	0.20	0.024	1
Fluorene	0.069	J	mg/kg	0.20	0.019	1
Phenanthrene	0.054	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	76		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-06
 Client ID: PB-848-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 14:17
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.7		mg/kg	0.20	0.025	1
Fluorene	0.14	J	mg/kg	0.20	0.020	1
Phenanthrene	0.15		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	78		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-07
 Client ID: PB-848-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 14:41
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.26		mg/kg	0.20	0.024	1
Fluorene	0.089	J	mg/kg	0.20	0.019	1
Phenanthrene	0.059	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.025	J	mg/kg	0.12	0.022	1
Chrysene	0.028	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.049	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.065	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.064	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	67		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-08
 Client ID: PB-848-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 15:05
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	77		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-09
 Client ID: PB-848-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 15:30
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.034	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	76		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-10
 Client ID: PB-848-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 15:54
 Analyst: CMM
 Percent Solids: 72%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.23	0.028	1
Fluorene	ND		mg/kg	0.23	0.022	1
Phenanthrene	ND		mg/kg	0.14	0.028	1
Anthracene	ND		mg/kg	0.14	0.044	1
Pyrene	ND		mg/kg	0.14	0.022	1
Benzo(a)anthracene	ND		mg/kg	0.14	0.025	1
Chrysene	ND		mg/kg	0.14	0.024	1
Benzo(b)fluoranthene	ND		mg/kg	0.14	0.038	1
Benzo(a)pyrene	ND		mg/kg	0.18	0.055	1
Benzo(ghi)perylene	ND		mg/kg	0.18	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	74		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-11
 Client ID: PB-848-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 16:18
 Analyst: CMM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.25		mg/kg	0.19	0.018	1
Phenanthrene	0.35		mg/kg	0.11	0.023	1
Anthracene	0.081	J	mg/kg	0.11	0.037	1
Pyrene	0.058	J	mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.029	J	mg/kg	0.11	0.021	1
Chrysene	0.034	J	mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.037	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.039	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	118		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	86		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-12
 Client ID: PB-848-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 16:42
 Analyst: CMM
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.043	J	mg/kg	0.21	0.025	1
Fluorene	0.13	J	mg/kg	0.21	0.020	1
Phenanthrene	0.68		mg/kg	0.12	0.025	1
Anthracene	0.19		mg/kg	0.12	0.040	1
Pyrene	0.51		mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.33		mg/kg	0.12	0.023	1
Chrysene	0.30		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.36		mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.30		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-13
 Client ID: PB-848-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 17:07
 Analyst: CMM
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.022	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	71		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-14
 Client ID: PB-848-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 17:31
 Analyst: CMM
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	53		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-15
 Client ID: PB-848-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 17:55
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	81		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-16
 Client ID: PB-848-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 18:19
 Analyst: CMM
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	70		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-17
 Client ID: PB-848-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 18:43
 Analyst: CMM
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.026	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.34		mg/kg	0.12	0.024	1
Anthracene	0.090	J	mg/kg	0.12	0.038	1
Pyrene	0.79		mg/kg	0.12	0.019	1
Benzo(a)anthracene	4.5		mg/kg	0.12	0.022	1
Chrysene	4.4		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	4.4		mg/kg	0.12	0.033	1
Benzo(a)pyrene	7.2		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	5.2		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	85		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-18
 Client ID: PB-848-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 19:08
 Analyst: CMM
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	86		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-19
 Client ID: FB-071122-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/13/22 12:21
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	0.04	J	ug/l	0.05	0.02	1
Anthracene	0.02	J	ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	32		23-120
2-Fluorobiphenyl	28		15-120
4-Terphenyl-d14	32	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-20
 Client ID: FB-071122-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:05
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/13/22 12:38
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.05	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	42		23-120
2-Fluorobiphenyl	44		15-120
4-Terphenyl-d14	47		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-21
 Client ID: DUP-39
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 19:32
 Analyst: CMM
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 23:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.091	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.080	J	mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.055	J	mg/kg	0.12	0.022	1
Chrysene	0.048	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.053	J	mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.048	J	mg/kg	0.16	0.048	1
Benzo(ghi)perylene	0.026	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	58		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/13/22 11:32
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1661883-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	0.02	J	ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	46		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/13/22 11:03
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 07/12/22 20:01

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-18,21 Batch: WG1662002-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	82		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1661883-2 WG1661883-3								
Naphthalene	50		123		40-140	84	Q	40
Fluorene	51		125		40-140	84	Q	40
Phenanthrene	50		123		40-140	84	Q	40
Anthracene	50		123		40-140	84	Q	40
Pyrene	51		129	Q	26-127	87	Q	40
Benzo(a)anthracene	48		123		40-140	88	Q	40
Chrysene	49		124		40-140	87	Q	40
Benzo(b)fluoranthene	52		138		40-140	91	Q	40
Benzo(a)pyrene	49		134		40-140	93	Q	40
Benzo(ghi)perylene	52		137		40-140	90	Q	40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	24		28		23-120
2-Fluorobiphenyl	25		30		15-120
4-Terphenyl-d14	26	Q	32	Q	41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-18,21 Batch: WG1662002-2 WG1662002-3								
Naphthalene	63		66		40-140	5		50
Fluorene	66		68		40-140	3		50
Phenanthrene	65		69		40-140	6		50
Anthracene	68		73		40-140	7		50
Pyrene	67		71		35-142	6		50
Benzo(a)anthracene	69		75		40-140	8		50
Chrysene	69		76		40-140	10		50
Benzo(b)fluoranthene	70		76		40-140	8		50
Benzo(a)pyrene	76		81		40-140	6		50
Benzo(ghi)perylene	68		74		40-140	8		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	66		70		23-120
2-Fluorobiphenyl	63		65		30-120
4-Terphenyl-d14	68		71		18-120

METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-01

Date Collected: 07/11/22 09:00

Client ID: PB-848-01-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.75		mg/kg	2.41	0.129	1	07/13/22 06:00	07/16/22 19:12	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-02

Date Collected: 07/11/22 09:10

Client ID: PB-848-02-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	26.2		mg/kg	4.38	0.235	2	07/13/22 06:00	07/18/22 16:25	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-03
 Client ID: PB-848-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	51.6		mg/kg	4.24	0.227	2	07/13/22 06:00	07/17/22 12:00	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-04
 Client ID: PB-848-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	716		mg/kg	2.44	0.130	1	07/13/22 06:00	07/16/22 19:52	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-05

Date Collected: 07/11/22 09:40

Client ID: PB-848-05-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.21		mg/kg	4.59	0.246	2	07/13/22 06:00	07/17/22 12:05	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-06
 Client ID: PB-848-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 09:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.20		mg/kg	2.39	0.128	1	07/13/22 06:00	07/16/22 20:02	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-07
 Client ID: PB-848-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3200		mg/kg	4.73	0.253	2	07/13/22 06:00	07/17/22 12:10	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-08

Date Collected: 07/11/22 10:10

Client ID: PB-848-08-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	246		mg/kg	4.70	0.252	2	07/13/22 06:00	07/17/22 12:15	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-09

Date Collected: 07/11/22 10:20

Client ID: PB-848-09-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1140		mg/kg	2.41	0.129	1	07/13/22 06:00	07/16/22 20:17	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-10
 Client ID: PB-848-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	721		mg/kg	5.48	0.294	2	07/13/22 06:00	07/17/22 12:20	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-11

Date Collected: 07/11/22 10:40

Client ID: PB-848-11-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	15.0		mg/kg	2.24	0.120	1	07/13/22 06:00	07/16/22 20:27	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-12
 Client ID: PB-848-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	282		mg/kg	2.36	0.126	1	07/13/22 06:00	07/16/22 20:32	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-13

Date Collected: 07/11/22 11:00

Client ID: PB-848-13-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	28.5		mg/kg	2.46	0.132	1	07/13/22 06:00	07/16/22 20:48	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-14
 Client ID: PB-848-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	15.7		mg/kg	2.42	0.130	1	07/13/22 06:00	07/16/22 20:53	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-15
 Client ID: PB-848-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.28		mg/kg	2.29	0.123	1	07/13/22 06:00	07/16/22 20:58	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-16
 Client ID: PB-848-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.41		mg/kg	2.32	0.124	1	07/13/22 06:00	07/16/22 21:03	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-17
 Client ID: PB-848-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:40
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1840		mg/kg	2.29	0.122	1	07/13/22 06:00	07/16/22 21:08	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-18
 Client ID: PB-848-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	60.7		mg/kg	11.4	0.609	5	07/13/22 06:00	07/17/22 13:08	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-19

Date Collected: 07/11/22 14:00

Client ID: FB-071122-1

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 23:01	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-20

Date Collected: 07/11/22 14:05

Client ID: FB-071122-2

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 23:06	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-21

Date Collected: 07/11/22 00:00

Client ID: DUP-39

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	18.8		mg/kg	2.22	0.119	1	07/13/22 06:00	07/16/22 21:18	EPA 3050B	1,6010D	MC



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1661768-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 21:46	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18,21 Batch: WG1661857-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/13/22 06:00	07/16/22 18:46	1,6010D	MC

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1661768-2								
Lead, Total	98		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 Batch: WG1661857-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128	-		

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-3 QC Sample: L2236831-01 Client ID: MS Sample												
Lead, Total	488.2	530	818.1	62	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 QC Batch ID: WG1661857-3 QC Sample: L2236779-01 Client ID: PB-848-01-SS01												
Lead, Total	6.75	50.7	44.3	74	Q	-	-		75-125	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236779

Report Date: 07/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-4 QC Sample: L2236831-01 Client ID: DUP Sample						
Lead, Total	488.2	359.8	ug/l	30	Q	20
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 QC Batch ID: WG1661857-4 QC Sample: L2236779-01 Client ID: PB-848-01-SS01						
Lead, Total	6.75	6.99	mg/kg	3		20

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

**Lab Serial Dilution
Analysis
Batch Quality Control**

Lab Number: L2236779

Report Date: 07/18/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-6 QC Sample: L2236831-01 Client ID: DUP Sample						
Lead, Total	488.2	429.6	ug/l	12		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-01

Date Collected: 07/11/22 09:00

Client ID: PB-848-01-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.6		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-02

Date Collected: 07/11/22 09:10

Client ID: PB-848-02-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-03

Date Collected: 07/11/22 09:20

Client ID: PB-848-03-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-04

Date Collected: 07/11/22 09:30

Client ID: PB-848-04-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.9		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-05

Date Collected: 07/11/22 09:40

Client ID: PB-848-05-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-06

Date Collected: 07/11/22 09:50

Client ID: PB-848-06-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236779

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-07

Date Collected: 07/11/22 10:00

Client ID: PB-848-07-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-08

Date Collected: 07/11/22 10:10

Client ID: PB-848-08-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-09
Client ID: PB-848-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-10

Date Collected: 07/11/22 10:30

Client ID: PB-848-10-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.1		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-11

Date Collected: 07/11/22 10:40

Client ID: PB-848-11-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.3		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-12
 Client ID: PB-848-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.6		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-13

Date Collected: 07/11/22 11:00

Client ID: PB-848-13-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-14

Date Collected: 07/11/22 11:10

Client ID: PB-848-14-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.1		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-15

Date Collected: 07/11/22 11:20

Client ID: PB-848-15-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.2		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-16

Date Collected: 07/11/22 11:30

Client ID: PB-848-16-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.4		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-17

Date Collected: 07/11/22 11:40

Client ID: PB-848-17-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236779-18

Date Collected: 07/11/22 11:50

Client ID: PB-848-18-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236779
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236779-21
Client ID: DUP-39
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	07/12/22 12:01	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236779

Report Date: 07/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18,21 QC Batch ID: WG1661707-1 QC Sample: L2236779-01 Client ID: PB-848-01-SS01						
Solids, Total	79.6	79.1	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-01A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-01B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-01C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-01D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-01F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-02A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-02B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-02C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-02D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-02E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-02F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-03A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-03B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-03C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-03D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-03E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-03F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-04A	Vial MeOH preserved	A	NA		4.4	Y	Absent		PA-8260HLW(14)
L2236779-04B	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-04C	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-04D	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		TS(7)
L2236779-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.4	Y	Absent		PB-TI(180)
L2236779-04F	Glass 120ml/4oz unpreserved	A	NA		4.4	Y	Absent		PA-PAH(14)
L2236779-05A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-05B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-05C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-05D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-05F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-06A	Vial MeOH preserved	A	NA		4.4	Y	Absent		PA-8260HLW(14)
L2236779-06B	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-06C	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-06D	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		TS(7)
L2236779-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.4	Y	Absent		PB-TI(180)
L2236779-06F	Glass 120ml/4oz unpreserved	A	NA		4.4	Y	Absent		PA-PAH(14)
L2236779-07A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236779-07B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-07C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-07D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-07F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-08A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-08B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-08C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-08D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-08E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-08F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-09A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-09B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-09C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-09D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-09E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-09F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-10A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-10B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-10C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-10D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-10E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-10F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-11A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236779-11B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-11C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-11D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-11F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-12A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-12B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-12C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-12D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-12F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-13A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-13B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-13C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-13D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-13E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236779**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-13F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-14A	Vial MeOH preserved	C	NA		3.7	Y	Absent		PA-8260HLW(14)
L2236779-14B	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-14C	Vial water preserved	C	NA		3.7	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-14D	Plastic 2oz unpreserved for TS	C	NA		3.7	Y	Absent		TS(7)
L2236779-14E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		3.7	Y	Absent		PB-TI(180)
L2236779-14F	Glass 120ml/4oz unpreserved	C	NA		3.7	Y	Absent		PA-PAH(14)
L2236779-15A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-15B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-15C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-15D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-15F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-16A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-16B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-16C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-16D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-16E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-16F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-17A	Vial MeOH preserved	A	NA		4.4	Y	Absent		PA-8260HLW(14)
L2236779-17B	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-17C	Vial water preserved	A	NA		4.4	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-17D	Plastic 2oz unpreserved for TS	A	NA		4.4	Y	Absent		TS(7)
L2236779-17E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.4	Y	Absent		PB-TI(180)
L2236779-17F	Glass 120ml/4oz unpreserved	A	NA		4.4	Y	Absent		PA-PAH(14)
L2236779-18A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236779-18B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)
L2236779-18C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260H(14),PA-8260HLW(14)

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236779-18D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-18E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-18F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)
L2236779-19A	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-19B	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-19C	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-19D	Plastic 250ml HNO3 preserved	A	<2	<2	4.4	Y	Absent		PB-6020T-PPB(180)
L2236779-19E	Amber 250ml unpreserved	A	7	7	4.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236779-19F	Amber 250ml unpreserved	A	7	7	4.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236779-20A	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-20B	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-20C	Vial HCl preserved	A	NA		4.4	Y	Absent		8011(14),PA-8260(14)
L2236779-20D	Plastic 250ml HNO3 preserved	A	<2	<2	4.4	Y	Absent		PB-6020T-PPB(180)
L2236779-20E	Amber 250ml unpreserved	A	7	7	4.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236779-20F	Amber 250ml unpreserved	A	7	7	4.4	Y	Absent		PA-PAHSIM-LVI(7)
L2236779-21A	Vial MeOH preserved	B	NA		3.1	Y	Absent		PA-8260HLW(14)
L2236779-21B	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-21C	Vial water preserved	B	NA		3.1	Y	Absent	12-JUL-22 09:00	PA-8260HLW(14)
L2236779-21D	Plastic 2oz unpreserved for TS	B	NA		3.1	Y	Absent		TS(7)
L2236779-21E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.1	Y	Absent		PB-TI(180)
L2236779-21F	Glass 120ml/4oz unpreserved	B	NA		3.1	Y	Absent		PA-PAH(14)



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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

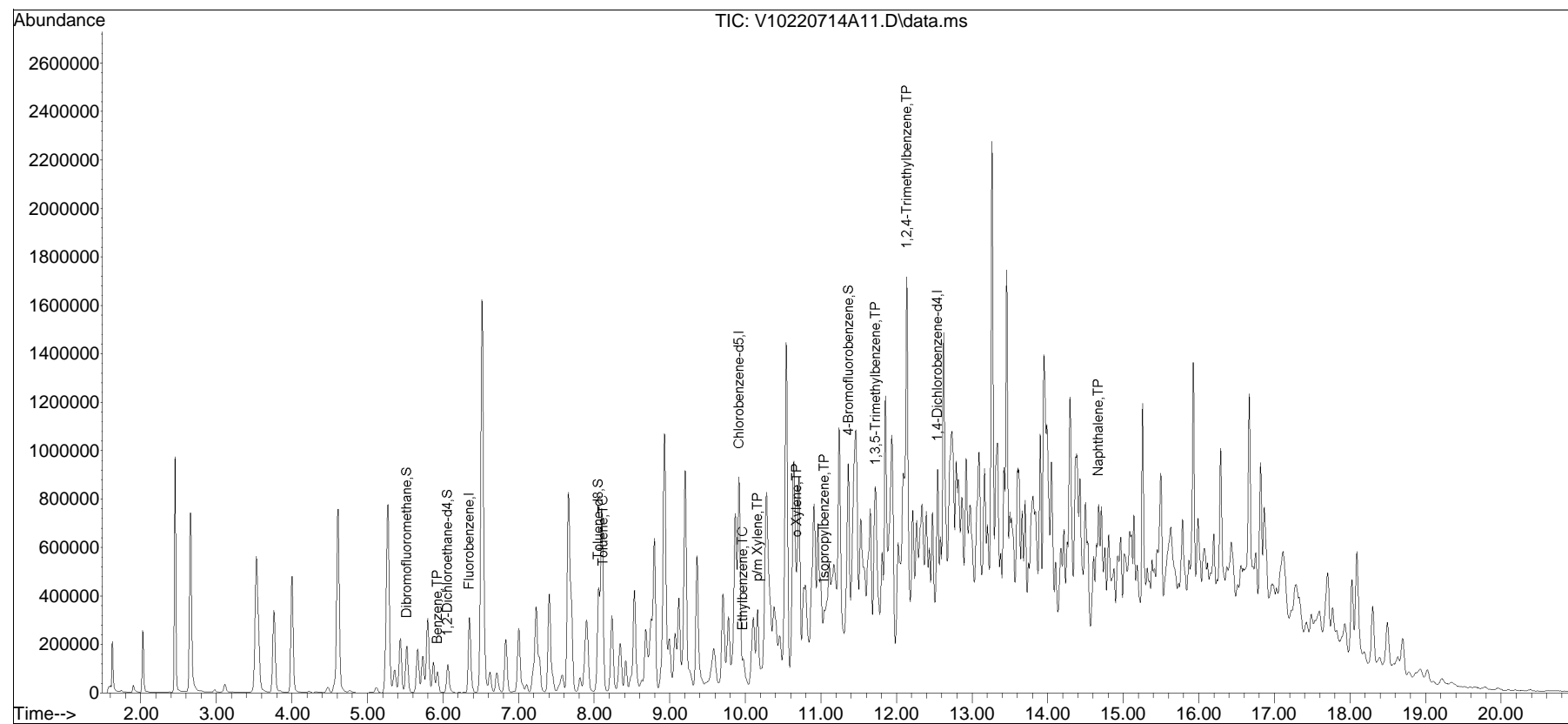
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220714A\
Data File : V10220714A11.D
Acq On : 14 Jul 2022 12:04 pm
Operator : VOA110:JC
Sample : 12236779-04D,31h,5.98,5,0.025,,a,r2f
Misc : WG1662882,ICAL18890
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Jul 15 09:26:26 2022
Quant Method : I:\VOLATILES\VOA110\2022\220714A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

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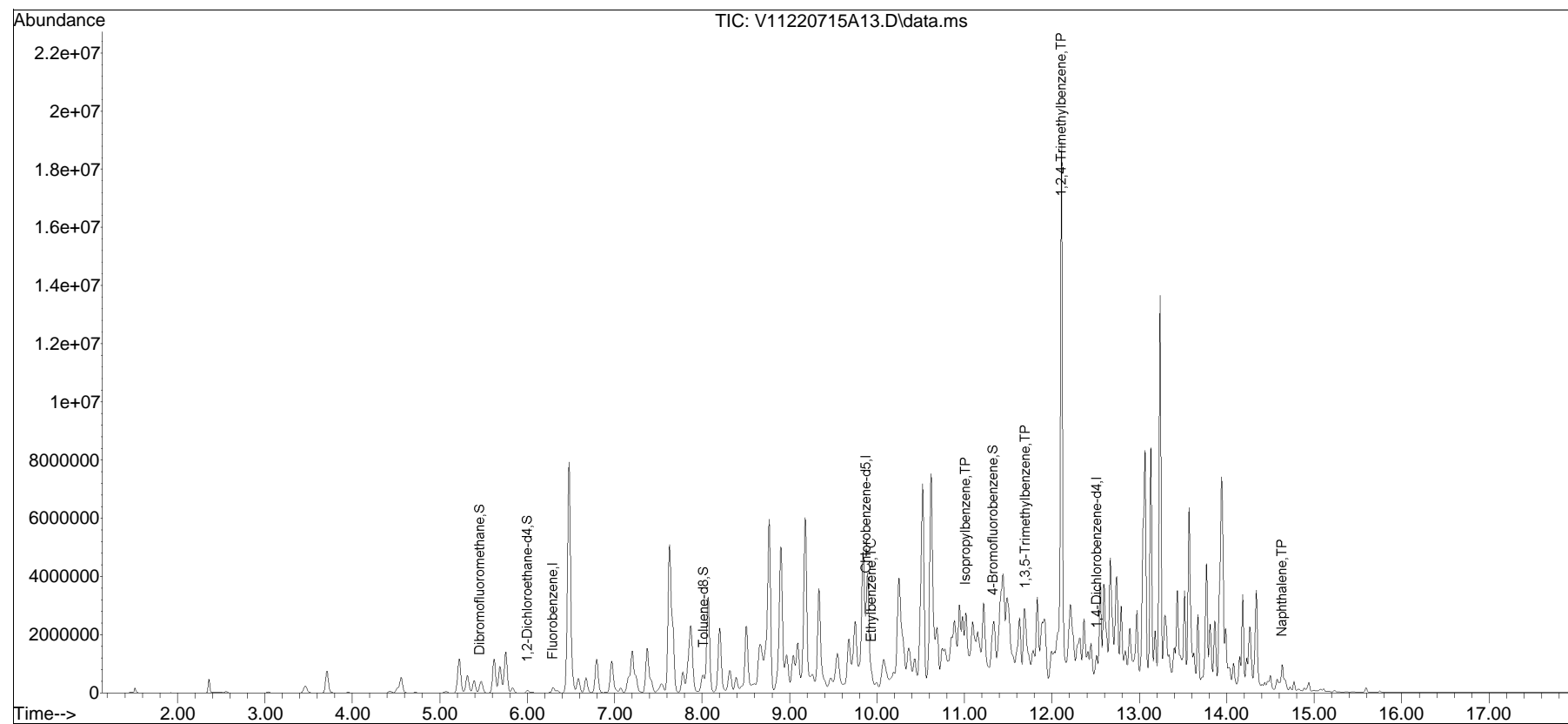


Quantitation Report (QT Reviewed)

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Operator : VOA111:LAC
Sample : L2236779-06,31H,5.94,5,0.100,,A,R2F
Misc : WG1663910,ICAL19072
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Jul 16 17:28:29 2022
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Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

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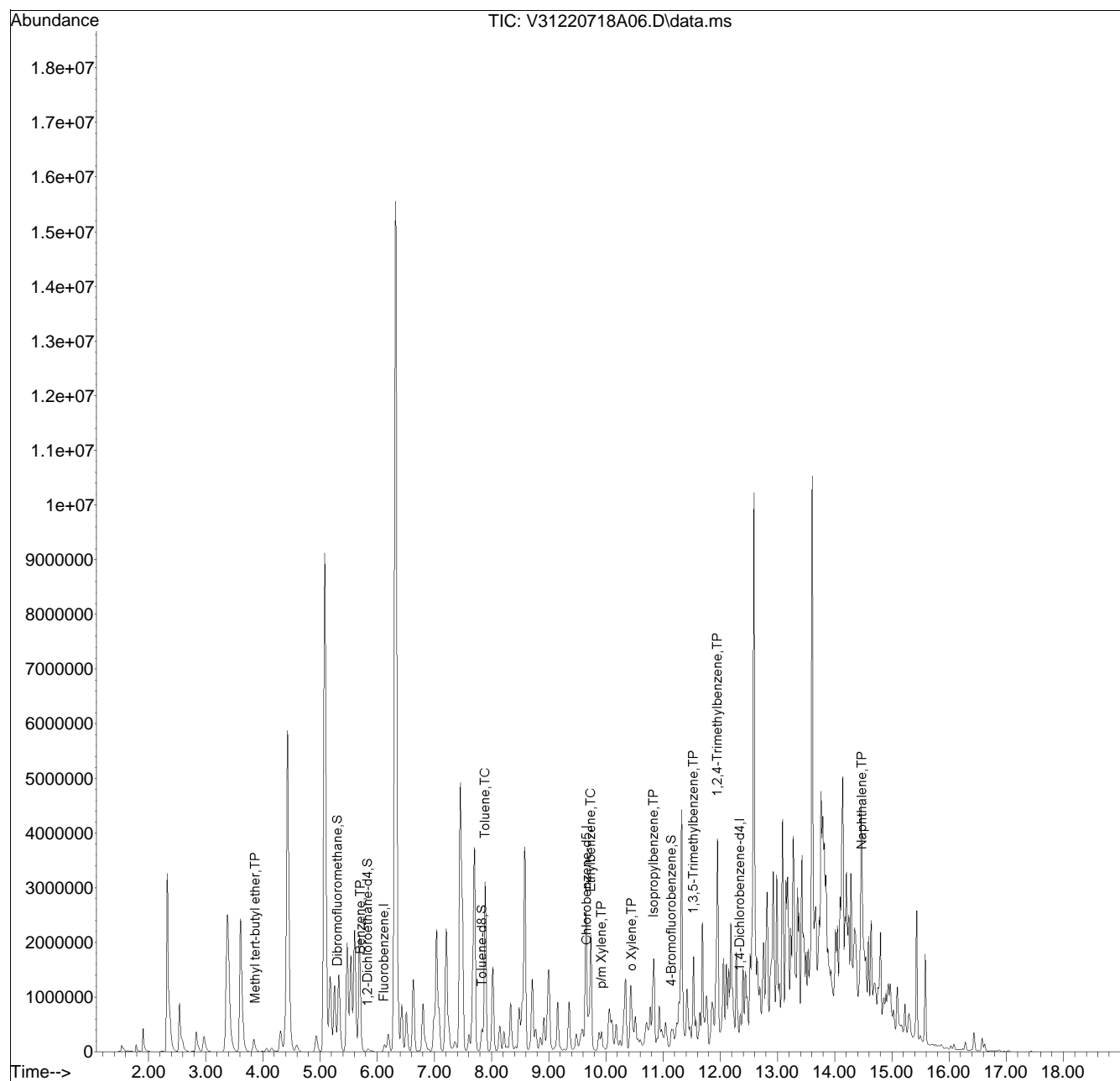


Quantitation Report (QT Reviewed)

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Operator : VOA131:MKS
Sample : 12236779-07,31,6.77,5,,b,r2f
Misc : WG1664169,ICAL19050
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jul 18 10:15:35 2022
Quant Method : I:\VOLATILES\VOA131\2022\220718A\V31_220525N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue May 31 11:11:48 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list18A\V31220718A01.D•

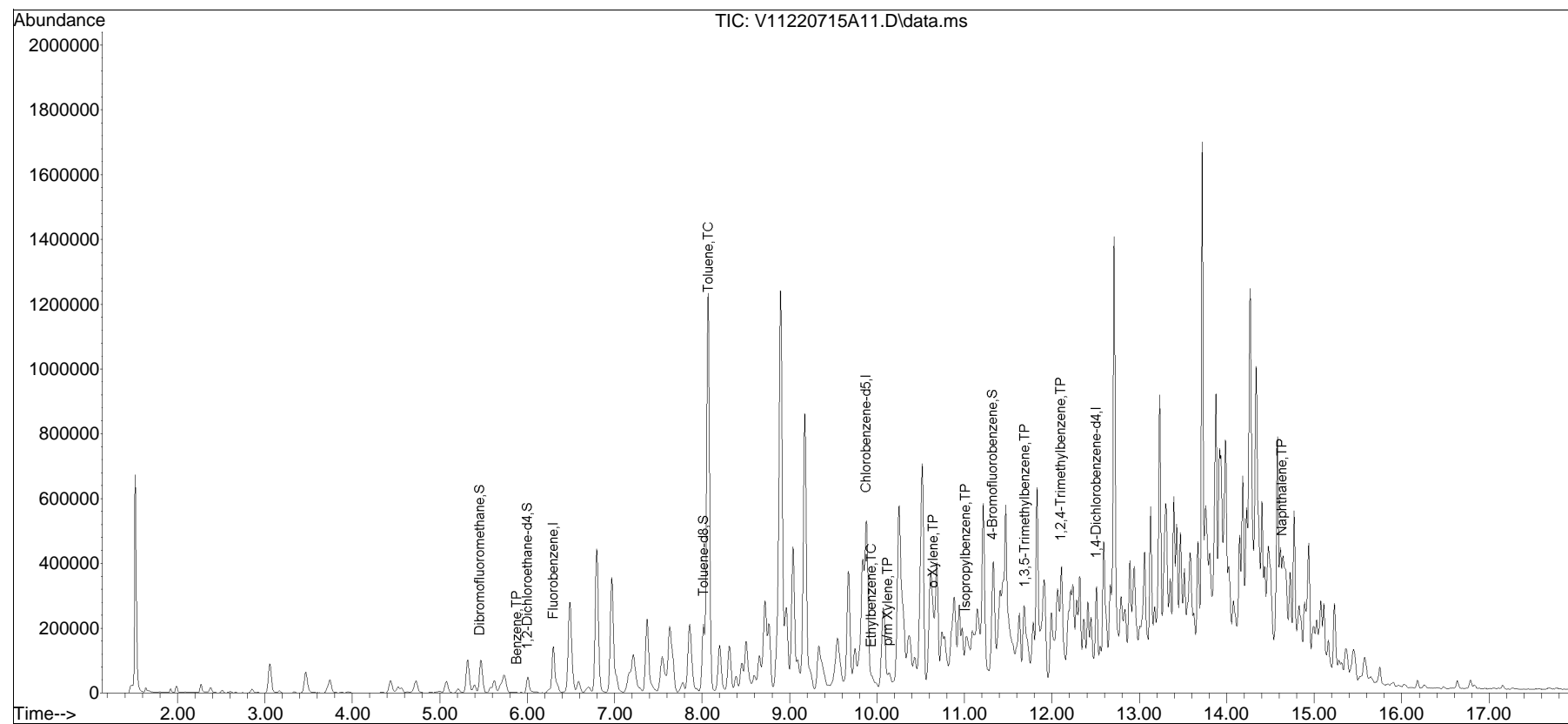


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220715A\
Data File : V11220715A11.D
Acq On : 15 Jul 2022 02:36 pm
Operator : VOA111:LAC
Sample : L2236779-09,31,6.29,5,,B,R2F
Misc : WG1663911,ICAL19072
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Jul 16 17:27:37 2022
Quant Method : I:\VOLATILES\VOA111\2022\220715A\V111_220608A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V11220715A02.D•

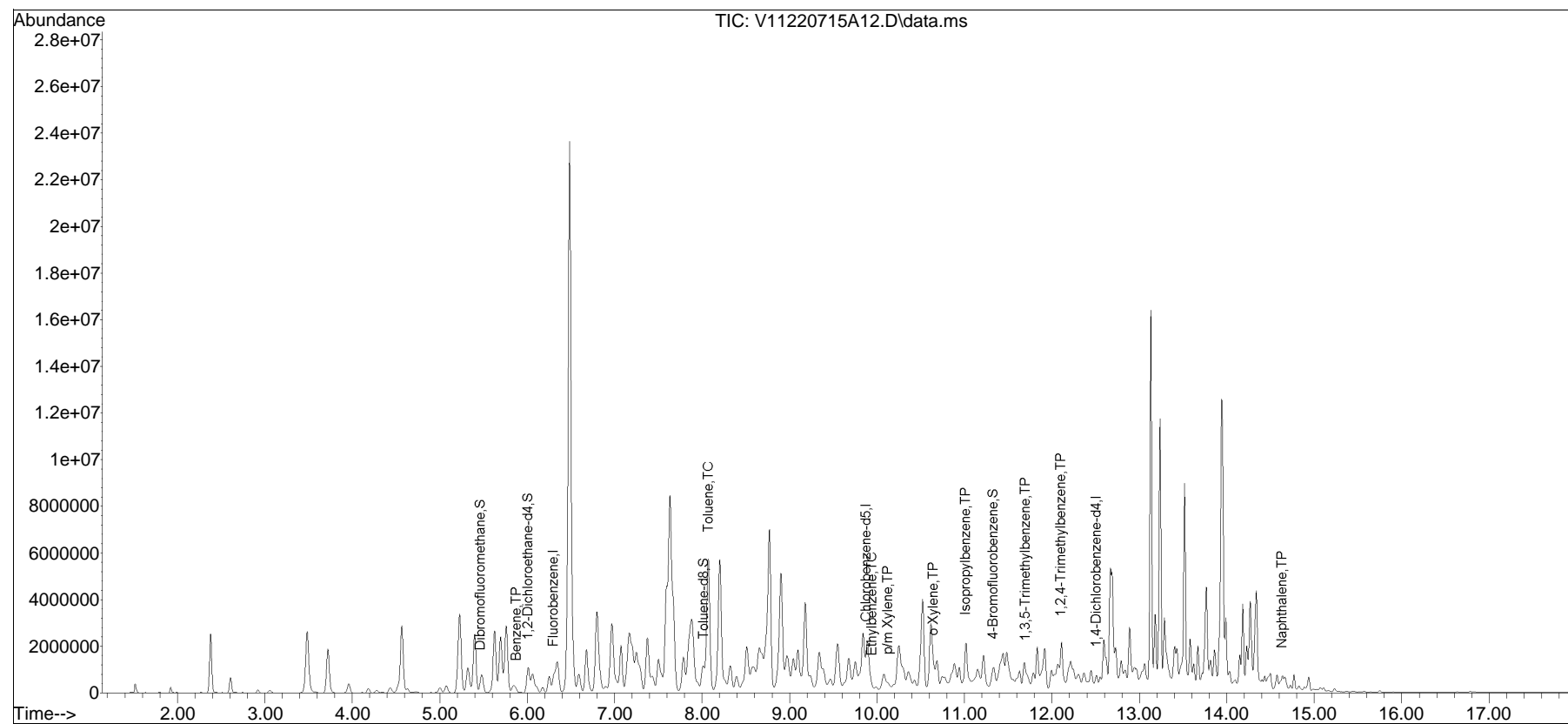


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220715A\
Data File : V11220715A12.D
Acq On : 15 Jul 2022 03:02 pm
Operator : VOA111:LAC
Sample : L2236779-11,31,4.28,5,,B,R2F
Misc : WG1663911,ICAL19072
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Jul 16 17:27:58 2022
Quant Method : I:\VOLATILES\VOA111\2022\220715A\V111_220608A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V11220715A02.D•

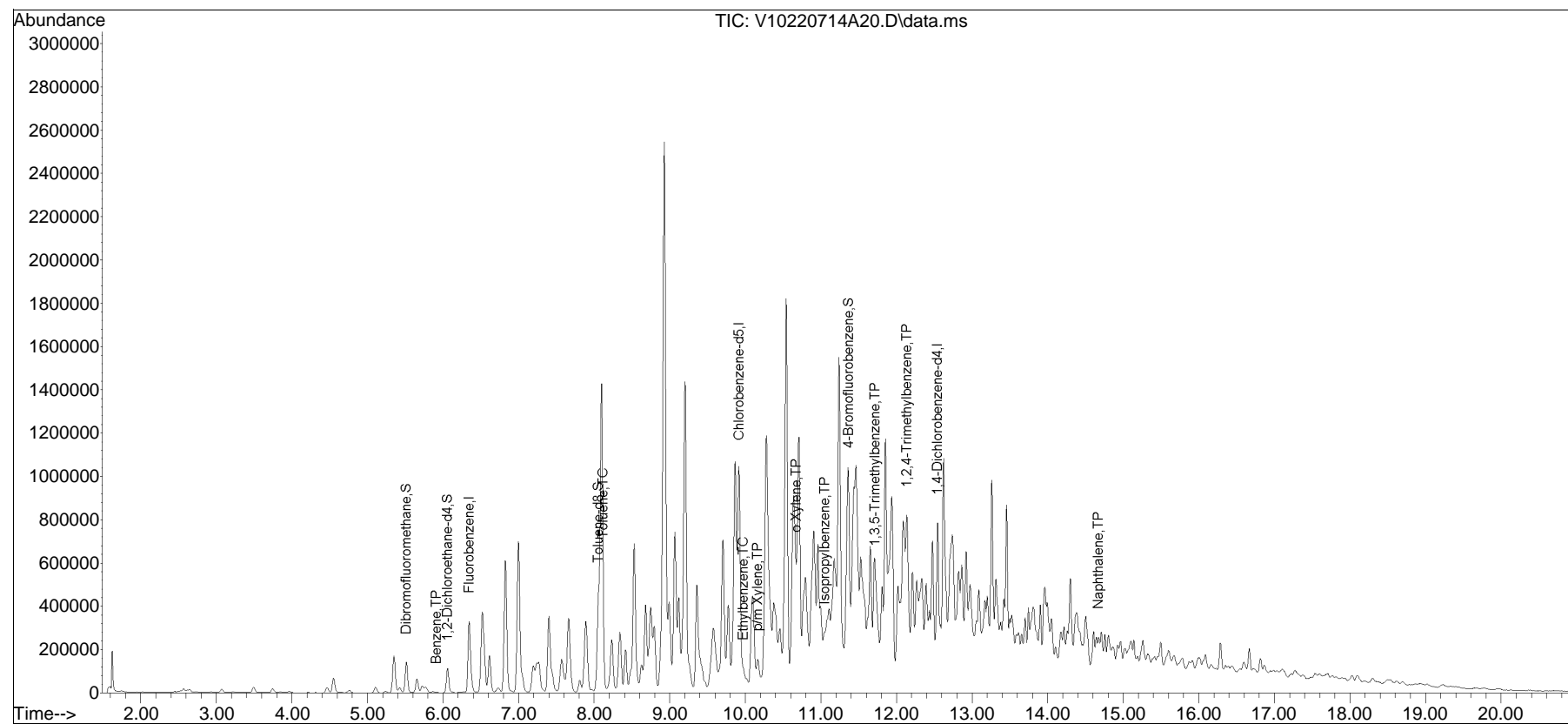


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220714A\
Data File : V10220714A20.D
Acq On : 14 Jul 2022 4:28 pm
Operator : VOA110:JC
Sample : 12236779-13,31h,5.46,5,0.100,,a,r2f
Misc : WG1662882,ICAL18890
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Jul 15 09:20:24 2022
Quant Method : I:\VOLATILES\VOA110\2022\220714A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list14A\V10220714A01.D•

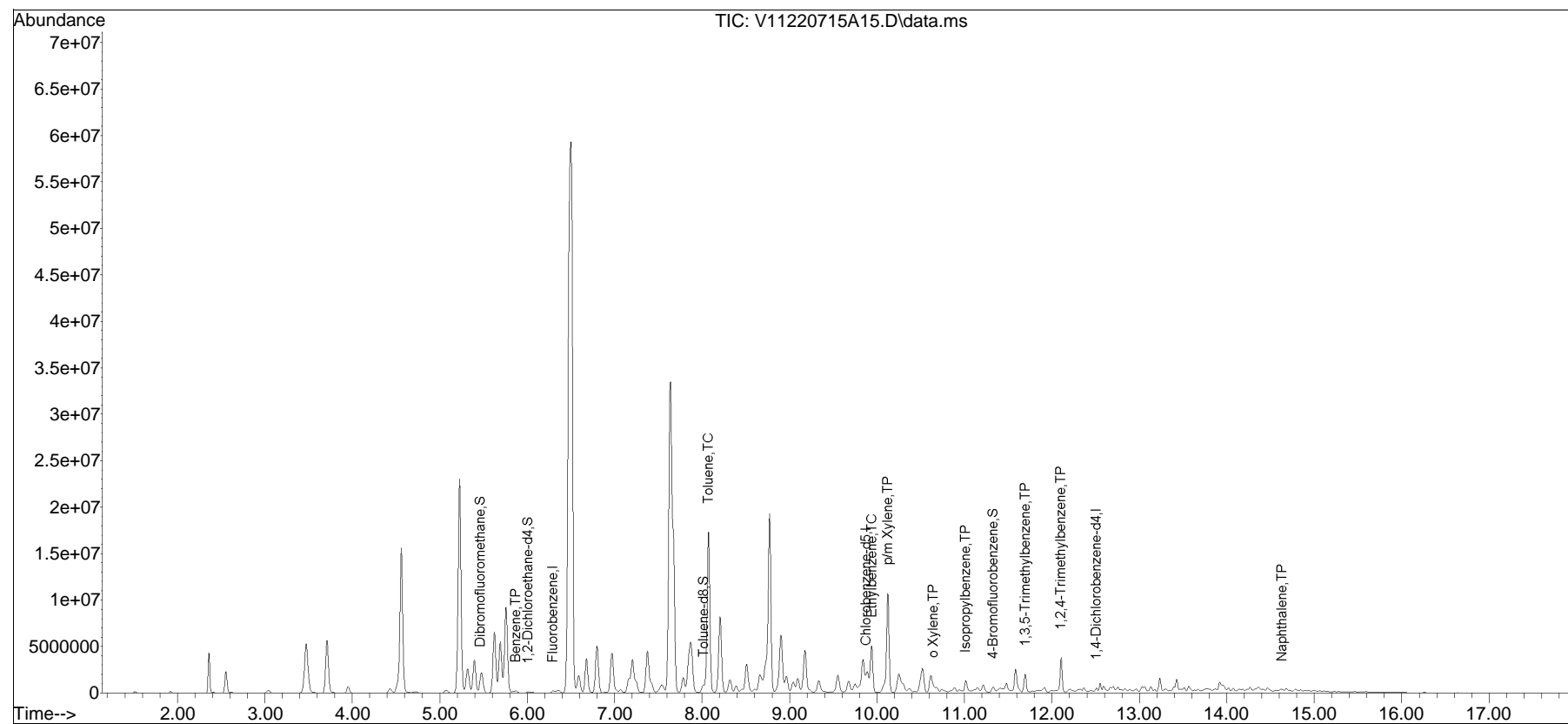


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220715A\
Data File : V11220715A15.D
Acq On : 15 Jul 2022 04:21 pm
Operator : VOA111:LAC
Sample : L2236779-15,31H,6.49,5,0.100,,A,R2F
Misc : WG1663910,ICAL19072
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Jul 16 17:30:19 2022
Quant Method : I:\VOLATILES\VOA111\2022\220715A\V111_220608A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V11220715A02.D•

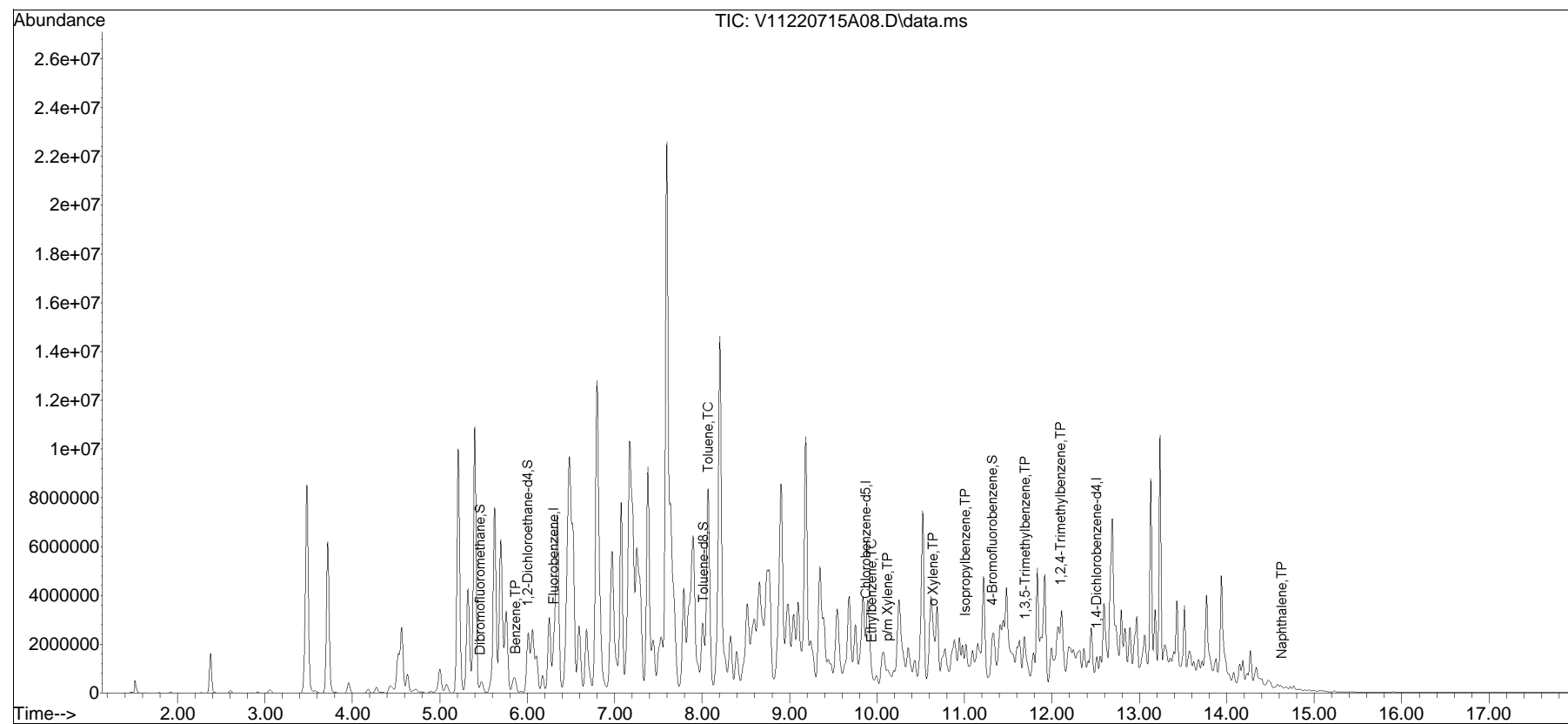


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA111\2022\220715A\
Data File : V11220715A08.D
Acq On : 15 Jul 2022 01:17 pm
Operator : VOA111:LAC
Sample : L2236779-18,31,5.90,5,,B,R2F
Misc : WG1663911,ICAL19072
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 16 17:26:42 2022
Quant Method : I:\VOLATILES\VOA111\2022\220715A\V111_220608A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Thu Jun 09 10:30:20 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V11220715A02.D•





ANALYTICAL REPORT

Lab Number:	L2236817
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/18/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236817

Report Date: 07/18/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236817-01	PB-843-03-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:00	07/11/22
L2236817-02	PB-843-04-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:20	07/11/22
L2236817-03	PB-843-05-SS01	SOIL	PHILADELPHIA, PA	07/11/22 10:50	07/11/22
L2236817-04	PB-843-10-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:00	07/11/22
L2236817-05	PB-843-11-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:10	07/11/22
L2236817-06	PB-843-12-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:20	07/11/22
L2236817-07	PB-843-13-SS01	SOIL	PHILADELPHIA, PA	07/11/22 11:35	07/11/22
L2236817-08	PB-843-17-SS01	SOIL	PHILADELPHIA, PA	07/11/22 13:00	07/11/22
L2236817-09	PB-843-14-SS01	SOIL	PHILADELPHIA, PA	07/11/22 13:10	07/11/22
L2236817-10	PB-843-01-SS01	SOIL	PHILADELPHIA, PA	07/11/22 13:20	07/11/22
L2236817-11	PB-843-08-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:00	07/11/22
L2236817-12	PB-843-02-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:15	07/11/22
L2236817-13	PB-843-06-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:25	07/11/22
L2236817-14	PB-843-07-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:35	07/11/22
L2236817-15	PB-843-15-SS01	SOIL	PHILADELPHIA, PA	07/11/22 14:50	07/11/22
L2236817-16	PB-843-09-SS01	SOIL	PHILADELPHIA, PA	07/11/22 15:00	07/11/22
L2236817-17	PB-843-16-SS01	SOIL	PHILADELPHIA, PA	07/11/22 15:20	07/11/22
L2236817-18	DUP-40	SOIL	PHILADELPHIA, PA	07/11/22 00:00	07/11/22
L2236817-19	FB-071122-3	WATER	PHILADELPHIA, PA	07/11/22 15:30	07/11/22
L2236817-20	FB-071122-4	WATER	PHILADELPHIA, PA	07/11/22 15:35	07/11/22
L2236817-21	TB-071122	WATER	PHILADELPHIA, PA	07/11/22 00:00	07/11/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Case Narrative (continued)

Report Submission


All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

L2236817-03, -17, and -18: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 07/18/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-01
 Client ID: PB-843-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 22:08
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00067	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00067	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00075	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-02
 Client ID: PB-843-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 22:34
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	0.00078		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	84		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-03
 Client ID: PB-843-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:00
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	0.0067		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.00012	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-04
 Client ID: PB-843-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:26
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0012	J	mg/kg	0.0021	0.00021	1
Benzene	0.082		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	0.0052		mg/kg	0.0021	0.00058	1
o-Xylene	0.0018		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.0070		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00037	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	79		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-05
 Client ID: PB-843-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/14/22 23:52
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00045	J	mg/kg	0.0025	0.00025	1
Benzene	0.00024	J	mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.00026	J	mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	79		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	87		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-06
 Client ID: PB-843-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:18
 Analyst: JC
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00090	J	mg/kg	0.0020	0.00020	1
Benzene	0.0017		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00045	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	80		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-07
 Client ID: PB-843-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 00:44
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	82		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-08
 Client ID: PB-843-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 01:11
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00055	J	mg/kg	0.0023	0.00023	1
Benzene	0.00024	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00064	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	72		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	79		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-09
 Client ID: PB-843-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 01:37
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00060	J	mg/kg	0.0020	0.00020	1
Benzene	0.00035	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.00017	J	mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	77		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-10
 Client ID: PB-843-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 02:03
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	88		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-11
 Client ID: PB-843-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 02:29
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-12
 Client ID: PB-843-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:15
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 02:56
 Analyst: JC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00085		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	79		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-13
 Client ID: PB-843-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:25
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 03:22
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00037	J	mg/kg	0.0024	0.00024	1
Benzene	0.0057		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	0.00071	J	mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	84		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-14
 Client ID: PB-843-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 05:07
 Analyst: JC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00047	J	mg/kg	0.0019	0.00019	1
Benzene	0.00032	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00025	1
Toluene	0.0020		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.00071	J	mg/kg	0.00096	0.00014	1
p/m-Xylene	0.0034		mg/kg	0.0019	0.00054	1
o-Xylene	0.0015		mg/kg	0.00096	0.00028	1
Xylenes, Total	0.0049		mg/kg	0.00096	0.00028	1
Isopropylbenzene	0.00016	J	mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	0.0011	J	mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	0.0018	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	83		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	128		70-130
Dibromofluoromethane	79		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-15
 Client ID: PB-843-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 03:48
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	73		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	76		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-16
 Client ID: PB-843-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 04:14
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	0.0018		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	ND		mg/kg	0.0012	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00070	1
o-Xylene	ND		mg/kg	0.0012	0.00037	1
Xylenes, Total	ND		mg/kg	0.0012	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	78		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-17
 Client ID: PB-843-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 04:40
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	83		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-18
 Client ID: DUP-40
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 11:00
 Analyst: LAC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	77		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-19
 Client ID: FB-071122-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 17:00
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-19
 Client ID: FB-071122-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 22:36
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	129		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-20
 Client ID: FB-071122-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 17:06
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-20
 Client ID: FB-071122-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/13/22 23:01
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	124		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	133	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-21
 Client ID: TB-071122
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/13/22 17:13
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-21
 Client ID: TB-071122
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 12:51
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	130		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/13/22 14:45
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/13/22 13:35

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-21 Batch: WG1662273-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/13/22 17:26
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1663309-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	119		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/14/22 20:49
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-17 Batch: WG1663407-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:04
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 21 Batch: WG1663987-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	119		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 08:41
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 18 Batch: WG1663990-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	101		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 19-21 Batch: WG1662273-2									
1,2-Dibromoethane	110		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1663309-3 WG1663309-4								
Methyl tert butyl ether	95		97		63-130	2		20
Benzene	98		100		70-130	2		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	95		96		70-130	1		20
Ethylbenzene	94		96		70-130	2		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	88		92		70-130	4		20
1,3,5-Trimethylbenzene	91		95		64-130	4		20
1,2,4-Trimethylbenzene	90		94		70-130	4		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	107		105		70-130
Toluene-d8	100		100		70-130
4-Bromofluorobenzene	102		94		70-130
Dibromofluoromethane	102		104		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-17 Batch: WG1663407-3 WG1663407-4								
Methyl tert butyl ether	99		101		66-130	2		30
Benzene	93		93		70-130	0		30
1,2-Dichloroethane	70		71		70-130	1		30
Toluene	95		95		70-130	0		30
1,2-Dibromoethane	86		88		70-130	2		30
Ethylbenzene	92		91		70-130	1		30
p/m-Xylene	96		95		70-130	1		30
o-Xylene	93		93		70-130	0		30
Isopropylbenzene	99		100		70-130	1		30
1,3,5-Trimethylbenzene	92		97		70-130	5		30
1,2,4-Trimethylbenzene	92		94		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	74		75		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	102		102		70-130
Dibromofluoromethane	79		79		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 21 Batch: WG1663987-3 WG1663987-4								
Methyl tert butyl ether	91		91		63-130	0		20
Benzene	100		100		70-130	0		20
1,2-Dichloroethane	98		100		70-130	2		20
Toluene	98		98		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	105		105		70-130	0		20
Isopropylbenzene	96		98		70-130	2		20
1,3,5-Trimethylbenzene	97		97		64-130	0		20
1,2,4-Trimethylbenzene	98		98		70-130	0		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	98		96		70-130
4-Bromofluorobenzene	91		92		70-130
Dibromofluoromethane	104		106		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 18 Batch: WG1663990-3 WG1663990-4								
Methyl tert butyl ether	94		100		66-130	6		30
Benzene	90		92		70-130	2		30
1,2-Dichloroethane	69	Q	70		70-130	1		30
Toluene	89		94		70-130	5		30
1,2-Dibromoethane	95		98		70-130	3		30
Ethylbenzene	86		91		70-130	6		30
p/m-Xylene	91		96		70-130	5		30
o-Xylene	91		96		70-130	5		30
Isopropylbenzene	86		91		70-130	6		30
1,3,5-Trimethylbenzene	85		91		70-130	7		30
1,2,4-Trimethylbenzene	86		92		70-130	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	78		77		70-130
Toluene-d8	98		101		70-130
4-Bromofluorobenzene	94		95		70-130
Dibromofluoromethane	90		90		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-01
 Client ID: PB-843-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 08:01
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	48		23-120
2-Fluorobiphenyl	23	Q	30-120
4-Terphenyl-d14	30		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-02
 Client ID: PB-843-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 08:25
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	55		23-120
2-Fluorobiphenyl	29	Q	30-120
4-Terphenyl-d14	23		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-03
 Client ID: PB-843-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 06:28
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	29	Q	30-120
4-Terphenyl-d14	30		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-04
 Client ID: PB-843-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 11:33
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	33		30-120
4-Terphenyl-d14	32		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-05
 Client ID: PB-843-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 12:43
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-06
 Client ID: PB-843-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 08:48
 Analyst: SLR
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	102		23-120
2-Fluorobiphenyl	53		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-07
 Client ID: PB-843-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 09:12
 Analyst: SLR
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.034	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	46		30-120
4-Terphenyl-d14	38		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-08
 Client ID: PB-843-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 11:56
 Analyst: SLR
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	58		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-09
 Client ID: PB-843-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 12:20
 Analyst: SLR
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	55		30-120
4-Terphenyl-d14	55		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-10
 Client ID: PB-843-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 15:23
 Analyst: CMM
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 07:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	57		30-120
4-Terphenyl-d14	65		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-11
 Client ID: PB-843-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 18:06
 Analyst: SLR
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	51		30-120
4-Terphenyl-d14	48		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-12
 Client ID: PB-843-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:15
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 05:41
 Analyst: SLR
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	63		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-13
 Client ID: PB-843-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:25
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 02:36
 Analyst: SZ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	71		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-14
 Client ID: PB-843-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 08:54
 Analyst: SZ
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.038	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	0.14		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.037	J	mg/kg	0.11	0.021	1
Chrysene	0.10	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.033	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	101		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	60		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-15
 Client ID: PB-843-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 06:56
 Analyst: SZ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.19		mg/kg	0.12	0.024	1
Anthracene	0.050	J	mg/kg	0.12	0.038	1
Pyrene	0.39		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.24		mg/kg	0.12	0.022	1
Chrysene	0.24		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.27		mg/kg	0.12	0.033	1
Benzo(a)pyrene	0.23		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	0.12	J	mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	67		30-120
4-Terphenyl-d14	54		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-16
 Client ID: PB-843-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 02:12
 Analyst: SZ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	54		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	42		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-17
 Client ID: PB-843-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 02:59
 Analyst: SZ
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	62		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-18
 Client ID: DUP-40
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 00:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/13/22 03:23
 Analyst: SZ
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/12/22 14:36

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	0.026	J	mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	0.026	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.022	J	mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	51		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-19
 Client ID: FB-071122-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:30
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/13/22 12:54
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	43		15-120
4-Terphenyl-d14	44		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-20
 Client ID: FB-071122-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 13:38
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	28		23-120
2-Fluorobiphenyl	29		15-120
4-Terphenyl-d14	32	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/13/22 01:47
Analyst: SLR

Extraction Method: EPA 3546
Extraction Date: 07/12/22 14:34

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-09,11-18 Batch: WG1661861-1					
Naphthalene	ND		mg/kg	0.17	0.020
Fluorene	ND		mg/kg	0.17	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	33		30-120
4-Terphenyl-d14	41		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/13/22 11:32
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 07/12/22 15:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1661883-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	0.02	J	ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	46		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/14/22 13:22
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 10 Batch: WG1662493-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	90		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-09,11-18 Batch: WG1661861-2 WG1661861-3								
Naphthalene	51		53		40-140	4		50
Fluorene	51		55		40-140	8		50
Phenanthrene	50		54		40-140	8		50
Anthracene	51		56		40-140	9		50
Pyrene	50		55		35-142	10		50
Benzo(a)anthracene	51		55		40-140	8		50
Chrysene	49		54		40-140	10		50
Benzo(b)fluoranthene	52		57		40-140	9		50
Benzo(a)pyrene	52		57		40-140	9		50
Benzo(ghi)perylene	49		55		40-140	12		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	51		52		23-120
2-Fluorobiphenyl	26	Q	26	Q	30-120
4-Terphenyl-d14	27		28		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1661883-2 WG1661883-3								
Naphthalene	50		123		40-140	84	Q	40
Fluorene	51		125		40-140	84	Q	40
Phenanthrene	50		123		40-140	84	Q	40
Anthracene	50		123		40-140	84	Q	40
Pyrene	51		129	Q	26-127	87	Q	40
Benzo(a)anthracene	48		123		40-140	88	Q	40
Chrysene	49		124		40-140	87	Q	40
Benzo(b)fluoranthene	52		138		40-140	91	Q	40
Benzo(a)pyrene	49		134		40-140	93	Q	40
Benzo(ghi)perylene	52		137		40-140	90	Q	40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	24		28		23-120
2-Fluorobiphenyl	25		30		15-120
4-Terphenyl-d14	26	Q	32	Q	41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 10 Batch: WG1662493-2 WG1662493-3								
Naphthalene	81		83		40-140	2		50
Fluorene	85		87		40-140	2		50
Phenanthrene	86		86		40-140	0		50
Anthracene	89		89		40-140	0		50
Pyrene	88		87		35-142	1		50
Benzo(a)anthracene	93		93		40-140	0		50
Chrysene	92		92		40-140	0		50
Benzo(b)fluoranthene	100		99		40-140	1		50
Benzo(a)pyrene	102		102		40-140	0		50
Benzo(ghi)perylene	90		92		40-140	2		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	87		89		23-120
2-Fluorobiphenyl	79		79		30-120
4-Terphenyl-d14	88		85		18-120



METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-01
 Client ID: PB-843-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.06		mg/kg	2.08	0.112	1	07/13/22 09:00	07/15/22 22:51	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-02

Date Collected: 07/11/22 10:20

Client ID: PB-843-04-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.63		mg/kg	2.26	0.121	1	07/13/22 09:00	07/15/22 21:42	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-03

Date Collected: 07/11/22 10:50

Client ID: PB-843-05-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.17		mg/kg	4.48	0.240	2	07/13/22 09:00	07/16/22 00:41	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-04

Date Collected: 07/11/22 11:00

Client ID: PB-843-10-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.30		mg/kg	2.21	0.118	1	07/13/22 09:00	07/15/22 21:52	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-05
 Client ID: PB-843-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:10
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.83		mg/kg	2.25	0.120	1	07/13/22 09:00	07/15/22 22:38	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-06

Date Collected: 07/11/22 11:20

Client ID: PB-843-12-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.48		mg/kg	2.15	0.115	1	07/13/22 09:00	07/15/22 22:42	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-07

Date Collected: 07/11/22 11:35

Client ID: PB-843-13-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.21		mg/kg	2.08	0.112	1	07/13/22 09:00	07/15/22 22:47	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-08

Date Collected: 07/11/22 13:00

Client ID: PB-843-17-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.0		mg/kg	2.38	0.128	1	07/13/22 09:00	07/15/22 23:27	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-09

Date Collected: 07/11/22 13:10

Client ID: PB-843-14-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.2		mg/kg	2.24	0.120	1	07/13/22 09:00	07/15/22 23:32	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-10

Date Collected: 07/11/22 13:20

Client ID: PB-843-01-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.02		mg/kg	2.08	0.112	1	07/13/22 09:00	07/15/22 23:36	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-11
 Client ID: PB-843-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.99		mg/kg	2.03	0.109	1	07/13/22 09:00	07/15/22 23:41	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-12

Date Collected: 07/11/22 14:15

Client ID: PB-843-02-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.41		mg/kg	2.18	0.117	1	07/13/22 09:00	07/15/22 23:46	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-13

Date Collected: 07/11/22 14:25

Client ID: PB-843-06-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.13		mg/kg	2.22	0.119	1	07/13/22 09:00	07/15/22 23:50	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-14
 Client ID: PB-843-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:35
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	14.2		mg/kg	2.21	0.118	1	07/13/22 09:00	07/15/22 23:55	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-15

Date Collected: 07/11/22 14:50

Client ID: PB-843-15-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	92.0		mg/kg	2.26	0.121	1	07/13/22 09:00	07/16/22 00:00	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-16

Date Collected: 07/11/22 15:00

Client ID: PB-843-09-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	18.3		mg/kg	2.32	0.125	1	07/13/22 09:00	07/16/22 00:04	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-17
 Client ID: PB-843-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 15:20
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	48.6		mg/kg	4.56	0.244	2	07/13/22 09:00	07/17/22 13:18	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-18

Date Collected: 07/11/22 00:00

Client ID: DUP-40

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	18.0		mg/kg	4.67	0.250	2	07/13/22 09:00	07/17/22 13:23	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-19

Date Collected: 07/11/22 15:30

Client ID: FB-071122-3

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 23:11	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-20

Date Collected: 07/11/22 15:35

Client ID: FB-071122-4

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 23:17	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1661768-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/12/22 12:16	07/13/22 21:46	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18 Batch: WG1661855-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/13/22 09:00	07/15/22 22:29	1,6010D	BV

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1661768-2								
Lead, Total	98		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-18 Batch: WG1661855-2 SRM Lot Number: D113-540								
Lead, Total	84		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-3 QC Sample: L2236831-01 Client ID: MS Sample												
Lead, Total	488.2	530	818.1	62	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1661855-3 QC Sample: L2236817-01 Client ID: PB-843-03-SS01												
Lead, Total	3.06	43.6	42.1	89		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236817

Report Date: 07/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-4 QC Sample: L2236831-01 Client ID: DUP Sample						
Lead, Total	488.2	359.8	ug/l	30	Q	20
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1661855-4 QC Sample: L2236817-01 Client ID: PB-843-03-SS01						
Lead, Total	3.06	3.18	mg/kg	4		20

**Lab Serial Dilution
Analysis
Batch Quality Control**

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1661768-6 QC Sample: L2236831-01 Client ID: DUP Sample						
Lead, Total	488.2	429.6	ug/l	12		20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-01

Date Collected: 07/11/22 10:00

Client ID: PB-843-03-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.8		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-02

Date Collected: 07/11/22 10:20

Client ID: PB-843-04-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-03
 Client ID: PB-843-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 10:50
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-04
 Client ID: PB-843-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 11:00
 Date Received: 07/11/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-05

Date Collected: 07/11/22 11:10

Client ID: PB-843-11-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-06

Date Collected: 07/11/22 11:20

Client ID: PB-843-12-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.2		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-07

Date Collected: 07/11/22 11:35

Client ID: PB-843-13-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.2		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-08
Client ID: PB-843-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 13:00
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-09

Date Collected: 07/11/22 13:10

Client ID: PB-843-14-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-10

Date Collected: 07/11/22 13:20

Client ID: PB-843-01-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.5		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-11

Date Collected: 07/11/22 14:00

Client ID: PB-843-08-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.7		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-12
Client ID: PB-843-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:15
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.4		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-13

Date Collected: 07/11/22 14:25

Client ID: PB-843-06-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.2		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**SAMPLE RESULTS**

Lab ID: L2236817-14

Date Collected: 07/11/22 14:35

Client ID: PB-843-07-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.3		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-15
Client ID: PB-843-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/11/22 14:50
Date Received: 07/11/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-16

Date Collected: 07/11/22 15:00

Client ID: PB-843-09-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.8		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-17

Date Collected: 07/11/22 15:20

Client ID: PB-843-16-SS01

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.9		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236817

Project Number: 200.00135.006

Report Date: 07/18/22

SAMPLE RESULTS

Lab ID: L2236817-18

Date Collected: 07/11/22 00:00

Client ID: DUP-40

Date Received: 07/11/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.3		%	0.100	NA	1	-	07/12/22 11:39	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236817

Report Date: 07/18/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1661670-1 QC Sample: L2236817-01 Client ID: PB-843-03-SS01						
Solids, Total	93.8	93.7	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-01A	Vial MeOH preserved	C	NA		2.8	Y	Absent		PA-8260HLW(14)
L2236817-01B	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-01C	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-01D	Plastic 2oz unpreserved for TS	C	NA		2.8	Y	Absent		TS(7)
L2236817-01E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.8	Y	Absent		PB-TI(180)
L2236817-01F	Glass 120ml/4oz unpreserved	C	NA		2.8	Y	Absent		PA-PAH(14)
L2236817-02A	Vial MeOH preserved	C	NA		2.8	Y	Absent		PA-8260HLW(14)
L2236817-02B	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-02C	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-02D	Plastic 2oz unpreserved for TS	C	NA		2.8	Y	Absent		TS(7)
L2236817-02E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.8	Y	Absent		PB-TI(180)
L2236817-02F	Glass 120ml/4oz unpreserved	C	NA		2.8	Y	Absent		PA-PAH(14)
L2236817-03A	Vial MeOH preserved	C	NA		2.8	Y	Absent		PA-8260HLW(14)
L2236817-03B	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-03C	Vial water preserved	C	NA		2.8	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-03D	Plastic 2oz unpreserved for TS	C	NA		2.8	Y	Absent		TS(7)
L2236817-03E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		2.8	Y	Absent		PB-TI(180)
L2236817-03F	Glass 120ml/4oz unpreserved	C	NA		2.8	Y	Absent		PA-PAH(14)
L2236817-04A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2236817-04B	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-04C	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-04D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2236817-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2236817-04F	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		PA-PAH(14)
L2236817-05A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2236817-05B	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-05C	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-05D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2236817-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2236817-05F	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		PA-PAH(14)
L2236817-06A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2236817-06B	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-06C	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-06D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2236817-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2236817-06F	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		PA-PAH(14)
L2236817-07A	Vial MeOH preserved	B	NA		3.5	Y	Absent		PA-8260HLW(14)
L2236817-07B	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-07C	Vial water preserved	B	NA		3.5	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-07D	Plastic 2oz unpreserved for TS	B	NA		3.5	Y	Absent		TS(7)
L2236817-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.5	Y	Absent		PB-TI(180)
L2236817-07F	Glass 120ml/4oz unpreserved	B	NA		3.5	Y	Absent		PA-PAH(14)
L2236817-08A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-08B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-08C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-08D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-08F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-09A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-09B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-09C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-09D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-09F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-10A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-10B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-10C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-10D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-10F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-11A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-11B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-11C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-11D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-11F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-12A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-12B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-12C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-12D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-12F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-13A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-13B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-13C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:20	PA-8260HLW(14)
L2236817-13D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-13E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-13F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-14A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-14B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-14C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-14D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-14E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-14F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-15A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-15B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-15C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-15D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-15E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-15F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-16A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-16B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-16C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-16D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-16E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-16F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-17A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-17B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-17C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-17D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-17E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-17F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-18A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2236817-18B	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)
L2236817-18C	Vial water preserved	A	NA		4.6	Y	Absent	12-JUL-22 07:22	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236817**Project Number:** 200.00135.006**Report Date:** 07/18/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236817-18D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2236817-18E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2236817-18F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2236817-19A	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-19B	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-19C	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-19D	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236817-19E	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236817-19F	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		PB-6020T-PPB(180)
L2236817-20A	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-20B	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-20C	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14),PA-8260(14)
L2236817-20D	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236817-20E	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2236817-20F	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		PB-6020T-PPB(180)
L2236817-21A	Vial HCl preserved	C	NA		2.8	Y	Absent		8011(14),PA-8260(14)
L2236817-21B	Vial HCl preserved	C	NA		2.8	Y	Absent		8011(14),PA-8260(14)

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236817
Report Date: 07/18/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

PADEP Short List Analytical Suites per Table III-5:

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
 2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
 3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
 4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
 5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene
-



ANALYTICAL REPORT

Lab Number:	L2236962
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/19/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
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Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236962

Report Date: 07/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236962-01	PB-881-01-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:00	07/12/22
L2236962-02	PB-881-02-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:10	07/12/22
L2236962-03	PB-881-03-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:20	07/12/22
L2236962-04	PB-881-04-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:30	07/12/22
L2236962-05	PB-881-05-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:40	07/12/22
L2236962-06	PB-881-06-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:50	07/12/22
L2236962-07	PB-881-07-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:00	07/12/22
L2236962-08	PB-881-08-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:10	07/12/22
L2236962-09	PB-881-09-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:20	07/12/22
L2236962-10	PB-881-10-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:30	07/12/22
L2236962-11	PB-881-11-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:40	07/12/22
L2236962-12	PB-881-12-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:50	07/12/22
L2236962-13	PB-881-13-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:00	07/12/22
L2236962-14	PB-881-14-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:10	07/12/22
L2236962-15	PB-881-15-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:20	07/12/22
L2236962-16	PB-881-16-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:30	07/12/22
L2236962-17	PB-881-17-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:40	07/12/22
L2236962-18	PB-881-18-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:50	07/12/22
L2236962-19	FB-071222-1	WATER	PHILADELPHIA, PA	07/12/22 14:00	07/12/22
L2236962-20	FB-071222-2	WATER	PHILADELPHIA, PA	07/12/22 14:10	07/12/22
L2236962-21	DUP-41	SOIL	PHILADELPHIA, PA	07/12/22 00:00	07/12/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2236962-01: The internal standard (IS) response(s) for 1,4-dichlorobenzene-d4 (43%) and the surrogate recovery for 4-bromofluorobenzene (3132%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis; however, since the IS response was below method criteria, all associated compounds are considered to have a potentially high bias. The results of both analyses are reported.

L2236962-07: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (507%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236962-07: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

L2236962-10: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (164%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2236962-21: The sample was analyzed as a High Level Methanol in order to quantitate results within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported.

L2236962-21: The sample was received in the appropriate containers (vials) for the Volatile Organics by EPA Method 5035/8260 analysis; however, they could not be used for analysis. With the client's authorization, a sample aliquot was taken from an unpreserved container (inappropriate plastic) and preserved appropriately.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Case Narrative (continued)

L2236962-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (786%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics

L2236962-01D and -10D: The sample has elevated detection limits due to the dilution required by the sample matrix.

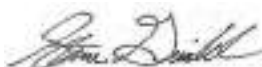
Total Metals

L2236962-03, -04, -11, -13, -14, and -16: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis.

The WG1662480-3 MS recoveries, performed on L2236962-01, are outside the acceptance criteria for lead (51%). A post digestion spike was performed and yielded unacceptable recoveries for lead (50%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Steven Gniadek

Title: Technical Director/Representative

Date: 07/19/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01
 Client ID: PB-881-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 20:40
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.063	0.016	1
Toluene	ND		mg/kg	0.063	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.018	1
Ethylbenzene	ND		mg/kg	0.063	0.0089	1
p/m-Xylene	ND		mg/kg	0.13	0.035	1
o-Xylene	ND		mg/kg	0.063	0.018	1
Xylenes, Total	ND		mg/kg	0.063	0.018	1
Isopropylbenzene	ND		mg/kg	0.063	0.0069	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01
 Client ID: PB-881-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 11:45
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	0.044		mg/kg	0.0017	0.00048	1
o-Xylene	0.011		mg/kg	0.00087	0.00025	1
Xylenes, Total	0.055		mg/kg	0.00087	0.00025	1
Isopropylbenzene	0.0032		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	0.091		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	0.72	E	mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	3130	Q	70-130
Dibromofluoromethane	108		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-02
 Client ID: PB-881-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 09:42
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-03
 Client ID: PB-881-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:10
 Analyst: MKS
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-04
 Client ID: PB-881-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:38
 Analyst: MKS
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00021	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	98		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-05
 Client ID: PB-881-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 11:07
 Analyst: MKS
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0012	J	mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-06
 Client ID: PB-881-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 11:36
 Analyst: MKS
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00056	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-07
 Client ID: PB-881-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 21:10
 Analyst: NLK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.084	0.0085	1
Benzene	ND		mg/kg	0.021	0.0070	1
1,2-Dichloroethane	ND		mg/kg	0.042	0.011	1
Toluene	ND		mg/kg	0.042	0.023	1
1,2-Dibromoethane	ND		mg/kg	0.021	0.012	1
Ethylbenzene	ND		mg/kg	0.042	0.0060	1
p/m-Xylene	0.038	J	mg/kg	0.084	0.024	1
o-Xylene	ND		mg/kg	0.042	0.012	1
Xylenes, Total	0.038	J	mg/kg	0.042	0.012	1
Isopropylbenzene	0.0089	J	mg/kg	0.042	0.0046	1
1,3,5-Trimethylbenzene	0.22		mg/kg	0.084	0.0081	1
1,2,4-Trimethylbenzene	0.47		mg/kg	0.084	0.014	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-07
 Client ID: PB-881-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 12:12
 Analyst: NLK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0015	0.00016	1
Benzene	ND		mg/kg	0.00038	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00077	0.00020	1
Toluene	ND		mg/kg	0.00077	0.00042	1
1,2-Dibromoethane	ND		mg/kg	0.00038	0.00023	1
Ethylbenzene	0.0033		mg/kg	0.00077	0.00011	1
p/m-Xylene	0.16		mg/kg	0.0015	0.00043	1
o-Xylene	0.0042		mg/kg	0.00077	0.00022	1
Xylenes, Total	0.16		mg/kg	0.00077	0.00022	1
Isopropylbenzene	0.042		mg/kg	0.00077	0.00008	1
1,3,5-Trimethylbenzene	1.1	E	mg/kg	0.0015	0.00015	1
1,2,4-Trimethylbenzene	2.1	E	mg/kg	0.0015	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	507	Q	70-130
Dibromofluoromethane	107		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-08
 Client ID: PB-881-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 12:04
 Analyst: MKS
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-09
 Client ID: PB-881-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 12:32
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00024	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	96		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-10
 Client ID: PB-881-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 17:42
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.21	0.021	1
Benzene	ND		mg/kg	0.052	0.017	1
1,2-Dichloroethane	ND		mg/kg	0.10	0.027	1
Toluene	ND		mg/kg	0.10	0.057	1
1,2-Dibromoethane	ND		mg/kg	0.052	0.031	1
Ethylbenzene	0.067	J	mg/kg	0.10	0.015	1
p/m-Xylene	0.37		mg/kg	0.21	0.059	1
o-Xylene	0.086	J	mg/kg	0.10	0.030	1
Xylenes, Total	0.46	J	mg/kg	0.10	0.030	1
Isopropylbenzene	0.26		mg/kg	0.10	0.011	1
1,3,5-Trimethylbenzene	3.6		mg/kg	0.21	0.020	1
1,2,4-Trimethylbenzene	9.4		mg/kg	0.21	0.035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	164	Q	70-130
Dibromofluoromethane	90		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-11
 Client ID: PB-881-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:00
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00027	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-12
 Client ID: PB-881-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:28
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-13
 Client ID: PB-881-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 13:56
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-14
 Client ID: PB-881-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 14:24
 Analyst: MKS
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-15
 Client ID: PB-881-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 16:18
 Analyst: MKS
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00054	J	mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00024	1
Toluene	ND		mg/kg	0.00096	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00096	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00096	0.00028	1
Xylenes, Total	ND		mg/kg	0.00096	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-16
 Client ID: PB-881-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 14:52
 Analyst: MKS
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00017	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-17
 Client ID: PB-881-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:21
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-18
 Client ID: PB-881-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 15:49
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-19
 Client ID: FB-071222-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 12:18
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-19
 Client ID: FB-071222-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:07
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	123		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-20
 Client ID: FB-071222-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 12:25
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-20
 Client ID: FB-071222-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:30
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-21
 Client ID: DUP-41
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 18:11
 Analyst: MKS
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	ND		mg/kg	0.065	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.032	0.019	1
Ethylbenzene	ND		mg/kg	0.065	0.0092	1
p/m-Xylene	0.037	J	mg/kg	0.13	0.036	1
o-Xylene	ND		mg/kg	0.065	0.019	1
Xylenes, Total	0.037	J	mg/kg	0.065	0.019	1
Isopropylbenzene	0.012	J	mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	0.45		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	1.0		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	92		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-21
 Client ID: DUP-41
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 12:39
 Analyst: NLK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00026	1
Toluene	0.0018		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	0.0017		mg/kg	0.00099	0.00014	1
p/m-Xylene	0.024		mg/kg	0.0020	0.00056	1
o-Xylene	0.0026		mg/kg	0.00099	0.00029	1
Xylenes, Total	0.027		mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.028		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	1.3	E	mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	0.84	E	mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	786	Q	70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 10:38
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-20 Batch: WG1662837-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:14
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02-06,08-09,11-18 Batch: WG1664129-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:14
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 10,21 Batch: WG1664132-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:44
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1664179-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/18/22 13:35
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01,07 Batch: WG1664660-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/19/22 11:18
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,07,21 Batch: WG1664816-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	75		70-130
Dibromofluoromethane	105		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236962

Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 19-20 Batch: WG1662837-2									
1,2-Dibromoethane	102		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02-06,08-09,11-18 Batch: WG1664129-3 WG1664129-4								
Methyl tert butyl ether	115		114		66-130	1		30
Benzene	103		102		70-130	1		30
1,2-Dichloroethane	97		96		70-130	1		30
Toluene	103		102		70-130	1		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	100		99		70-130	1		30
p/m-Xylene	100		99		70-130	1		30
o-Xylene	101		100		70-130	1		30
Isopropylbenzene	100		99		70-130	1		30
1,3,5-Trimethylbenzene	98		97		70-130	1		30
1,2,4-Trimethylbenzene	101		100		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	92		93		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 10,21 Batch: WG1664132-3 WG1664132-4								
Methyl tert butyl ether	115		114		66-130	1		30
Benzene	103		102		70-130	1		30
1,2-Dichloroethane	97		96		70-130	1		30
Toluene	103		102		70-130	1		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	100		99		70-130	1		30
p/m-Xylene	100		99		70-130	1		30
o-Xylene	101		100		70-130	1		30
Isopropylbenzene	100		99		70-130	1		30
1,3,5-Trimethylbenzene	98		97		70-130	1		30
1,2,4-Trimethylbenzene	101		100		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	92		93		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1664179-3 WG1664179-4								
Methyl tert butyl ether	94		96		63-130	2		20
Benzene	94		95		70-130	1		20
1,2-Dichloroethane	93		94		70-130	1		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	110		120		70-130	9		20
1,3,5-Trimethylbenzene	100		110		64-130	10		20
1,2,4-Trimethylbenzene	100		110		70-130	10		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		95		70-130
Toluene-d8	110		109		70-130
4-Bromofluorobenzene	121		123		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01,07 Batch: WG1664660-3 WG1664660-4								
Methyl tert butyl ether	115		118		66-130	3		30
Benzene	108		108		70-130	0		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	108		109		70-130	1		30
1,2-Dibromoethane	106		110		70-130	4		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	107		108		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	111		110		70-130	1		30
1,3,5-Trimethylbenzene	107		107		70-130	0		30
1,2,4-Trimethylbenzene	107		108		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	91		92		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,07,21 Batch: WG1664816-3 WG1664816-4								
Methyl tert butyl ether	92		91		66-130	1		30
Benzene	96		94		70-130	2		30
1,2-Dichloroethane	90		89		70-130	1		30
Toluene	95		96		70-130	1		30
1,2-Dibromoethane	98		99		70-130	1		30
Ethylbenzene	94		96		70-130	2		30
p/m-Xylene	100		101		70-130	1		30
o-Xylene	96		97		70-130	1		30
Isopropylbenzene	92		92		70-130	0		30
1,3,5-Trimethylbenzene	92		91		70-130	1		30
1,2,4-Trimethylbenzene	89		89		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		97		70-130
Toluene-d8	98		101		70-130
4-Bromofluorobenzene	83		82		70-130
Dibromofluoromethane	106		105		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01 D
 Client ID: PB-881-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/19/22 15:12
 Analyst: JG
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.26	J	mg/kg	0.88	0.11	5
Fluorene	0.19	J	mg/kg	0.88	0.085	5
Phenanthrene	0.16	J	mg/kg	0.52	0.11	5
Anthracene	ND		mg/kg	0.52	0.17	5
Pyrene	0.15	J	mg/kg	0.52	0.087	5
Benzo(a)anthracene	ND		mg/kg	0.52	0.099	5
Chrysene	0.22	J	mg/kg	0.52	0.091	5
Benzo(b)fluoranthene	ND		mg/kg	0.52	0.15	5
Benzo(a)pyrene	ND		mg/kg	0.70	0.21	5
Benzo(ghi)perylene	ND		mg/kg	0.70	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	51		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-02
 Client ID: PB-881-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 17:07
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-03
 Client ID: PB-881-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 17:31
 Analyst: EK
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.2		mg/kg	0.17	0.021	1
Fluorene	0.51		mg/kg	0.17	0.017	1
Phenanthrene	1.0		mg/kg	0.10	0.021	1
Anthracene	0.097	J	mg/kg	0.10	0.033	1
Pyrene	0.15		mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.040	J	mg/kg	0.10	0.019	1
Chrysene	0.20		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	95		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-04
 Client ID: PB-881-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 17:55
 Analyst: EK
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.048	J	mg/kg	0.19	0.023	1
Fluorene	0.018	J	mg/kg	0.19	0.018	1
Phenanthrene	0.21		mg/kg	0.11	0.023	1
Anthracene	0.047	J	mg/kg	0.11	0.037	1
Pyrene	0.28		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.23		mg/kg	0.11	0.021	1
Chrysene	0.22		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.29		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.25		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.14	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	72		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-05
 Client ID: PB-881-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 18:19
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-06
 Client ID: PB-881-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 18:43
 Analyst: EK
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	74		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-07
 Client ID: PB-881-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 19:07
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.048	J	mg/kg	0.17	0.020	1
Fluorene	0.23		mg/kg	0.17	0.016	1
Phenanthrene	0.48		mg/kg	0.10	0.020	1
Anthracene	0.040	J	mg/kg	0.10	0.033	1
Pyrene	0.064	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.022	J	mg/kg	0.10	0.019	1
Chrysene	0.087	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	109		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-08
 Client ID: PB-881-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 19:32
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	77		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-09
 Client ID: PB-881-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 19:56
 Analyst: EK
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-10 D
 Client ID: PB-881-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/19/22 15:36
 Analyst: JG
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	4.4		mg/kg	0.86	0.10	5
Fluorene	1.1		mg/kg	0.86	0.083	5
Phenanthrene	1.9		mg/kg	0.51	0.10	5
Anthracene	ND		mg/kg	0.51	0.17	5
Pyrene	0.23	J	mg/kg	0.51	0.085	5
Benzo(a)anthracene	0.17	J	mg/kg	0.51	0.097	5
Chrysene	0.34	J	mg/kg	0.51	0.089	5
Benzo(b)fluoranthene	ND		mg/kg	0.51	0.14	5
Benzo(a)pyrene	ND		mg/kg	0.69	0.21	5
Benzo(ghi)perylene	ND		mg/kg	0.69	0.10	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	81		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-11
 Client ID: PB-881-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 20:44
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	77		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-12
 Client ID: PB-881-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:08
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-13
 Client ID: PB-881-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:32
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-14
 Client ID: PB-881-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:56
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-15
 Client ID: PB-881-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 22:20
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-16
 Client ID: PB-881-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 22:44
 Analyst: EK
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	83		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-17
 Client ID: PB-881-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:08
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	92		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-18
 Client ID: PB-881-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:32
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	84		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-19
 Client ID: FB-071222-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 15:31
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	30		23-120
2-Fluorobiphenyl	31		15-120
4-Terphenyl-d14	34	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-20
 Client ID: FB-071222-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 15:47
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	30		23-120
2-Fluorobiphenyl	31		15-120
4-Terphenyl-d14	31	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-21
 Client ID: DUP-41
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:56
 Analyst: EK
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/13/22 17:35

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.60		mg/kg	0.18	0.022	1
Fluorene	0.41		mg/kg	0.18	0.017	1
Phenanthrene	0.88		mg/kg	0.11	0.022	1
Anthracene	0.063	J	mg/kg	0.11	0.035	1
Pyrene	0.10	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.031	J	mg/kg	0.11	0.020	1
Chrysene	0.15		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/14/22 13:22
Analyst: CMM

Extraction Method: EPA 3546
Extraction Date: 07/13/22 17:34

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-18,21 Batch: WG1662493-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.10	0.020
Anthracene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.016
Benzo(a)anthracene	ND		mg/kg	0.10	0.019
Chrysene	ND		mg/kg	0.10	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	90		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/15/22 15:15
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1662556-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	31		23-120
2-Fluorobiphenyl	32		15-120
4-Terphenyl-d14	34	Q	41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-18,21 Batch: WG1662493-2 WG1662493-3								
Naphthalene	81		83		40-140	2		50
Fluorene	85		87		40-140	2		50
Phenanthrene	86		86		40-140	0		50
Anthracene	89		89		40-140	0		50
Pyrene	88		87		35-142	1		50
Benzo(a)anthracene	93		93		40-140	0		50
Chrysene	92		92		40-140	0		50
Benzo(b)fluoranthene	100		99		40-140	1		50
Benzo(a)pyrene	102		102		40-140	0		50
Benzo(ghi)perylene	90		92		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	87		89		23-120
2-Fluorobiphenyl	79		79		30-120
4-Terphenyl-d14	88		85		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1662556-2 WG1662556-3								
Naphthalene	57		57		40-140	0		40
Fluorene	58		62		40-140	7		40
Phenanthrene	57		61		40-140	7		40
Anthracene	57		61		40-140	7		40
Pyrene	61		64		26-127	5		40
Benzo(a)anthracene	59		62		40-140	5		40
Chrysene	57		63		40-140	10		40
Benzo(b)fluoranthene	60		70		40-140	15		40
Benzo(a)pyrene	61		65		40-140	6		40
Benzo(ghi)perylene	58		61		40-140	5		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	27		29		23-120
2-Fluorobiphenyl	29		30		15-120
4-Terphenyl-d14	30	Q	33	Q	41-149



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01

Date Collected: 07/12/22 10:00

Client ID: PB-881-01-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.62	J	mg/kg	2.00	0.107	1	07/13/22 21:00	07/18/22 12:16	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-02

Date Collected: 07/12/22 10:10

Client ID: PB-881-02-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.49	J	mg/kg	2.04	0.109	1	07/13/22 21:00	07/18/22 12:49	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-03
 Client ID: PB-881-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:20
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.78	J	mg/kg	4.15	0.223	2	07/13/22 21:00	07/18/22 13:45	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-04

Date Collected: 07/12/22 10:30

Client ID: PB-881-04-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	89.2		mg/kg	22.8	1.22	10	07/13/22 21:00	07/18/22 14:27	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-05
 Client ID: PB-881-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.70		mg/kg	2.20	0.118	1	07/13/22 21:00	07/18/22 13:03	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-06
 Client ID: PB-881-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.45	J	mg/kg	2.02	0.108	1	07/13/22 21:00	07/18/22 13:08	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-07

Date Collected: 07/12/22 11:00

Client ID: PB-881-07-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.48	J	mg/kg	1.98	0.106	1	07/13/22 21:00	07/18/22 13:12	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-08

Date Collected: 07/12/22 11:10

Client ID: PB-881-08-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.67		mg/kg	2.43	0.130	1	07/13/22 21:00	07/18/22 13:17	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-09

Date Collected: 07/12/22 11:20

Client ID: PB-881-09-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.12		mg/kg	2.29	0.123	1	07/13/22 21:00	07/18/22 13:22	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-10
 Client ID: PB-881-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.22	J	mg/kg	2.04	0.109	1	07/13/22 21:00	07/18/22 13:26	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-11
 Client ID: PB-881-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.35	J	mg/kg	4.14	0.222	2	07/13/22 21:00	07/18/22 13:55	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-12

Date Collected: 07/12/22 11:50

Client ID: PB-881-12-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.40	J	mg/kg	2.06	0.110	1	07/13/22 21:00	07/18/22 13:59	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-13
 Client ID: PB-881-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.20	J	mg/kg	4.20	0.225	2	07/13/22 21:00	07/18/22 14:55	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-14

Date Collected: 07/12/22 12:10

Client ID: PB-881-14-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.02	J	mg/kg	3.98	0.214	2	07/13/22 21:00	07/18/22 15:00	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-15

Date Collected: 07/12/22 12:20

Client ID: PB-881-15-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.85		mg/kg	2.36	0.126	1	07/13/22 21:00	07/18/22 14:14	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-16

Date Collected: 07/12/22 12:30

Client ID: PB-881-16-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	10.7		mg/kg	4.80	0.257	2	07/13/22 21:00	07/18/22 15:05	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-17

Date Collected: 07/12/22 12:40

Client ID: PB-881-17-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.40	J	mg/kg	2.05	0.110	1	07/13/22 21:00	07/18/22 14:23	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-18

Date Collected: 07/12/22 12:50

Client ID: PB-881-18-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.46	J	mg/kg	2.05	0.110	1	07/13/22 21:00	07/18/22 14:41	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-19

Date Collected: 07/12/22 14:00

Client ID: FB-071222-1

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 15:49	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-20
 Client ID: FB-071222-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 15:58	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-21

Date Collected: 07/12/22 00:00

Client ID: DUP-41

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.48	J	mg/kg	2.05	0.110	1	07/13/22 21:00	07/18/22 14:46	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1662468-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 14:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18,21 Batch: WG1662480-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/13/22 21:00	07/18/22 11:53	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1662468-2								
Lead, Total	103		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 Batch: WG1662480-2 SRM Lot Number: D113-540								
Lead, Total	76		-		72-128	-		

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1662468-3 QC Sample: L2236962-19 Client ID: FB-071222-1												
Lead, Total	ND	530	530.0	100		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 QC Batch ID: WG1662480-3 QC Sample: L2236962-01 Client ID: PB-881-01-SS01												
Lead, Total	1.62J	43.9	22.6	51	Q	-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236962

Report Date: 07/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1662468-4 QC Sample: L2236962-19 Client ID: FB-071222-1						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-18,21 QC Batch ID: WG1662480-4 QC Sample: L2236962-01 Client ID: PB-881-01-SS01						
Lead, Total	1.62J	1.66J	mg/kg	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-01

Date Collected: 07/12/22 10:00

Client ID: PB-881-01-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.9		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-02

Date Collected: 07/12/22 10:10

Client ID: PB-881-02-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.9		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-03

Date Collected: 07/12/22 10:20

Client ID: PB-881-03-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.2		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-04

Date Collected: 07/12/22 10:30

Client ID: PB-881-04-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.0		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-05

Date Collected: 07/12/22 10:40

Client ID: PB-881-05-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.8		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-06

Date Collected: 07/12/22 10:50

Client ID: PB-881-06-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.8		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-07

Date Collected: 07/12/22 11:00

Client ID: PB-881-07-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.4		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-08

Date Collected: 07/12/22 11:10

Client ID: PB-881-08-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.6		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-09

Date Collected: 07/12/22 11:20

Client ID: PB-881-09-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.0		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-10

Date Collected: 07/12/22 11:30

Client ID: PB-881-10-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.1		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-11
Client ID: PB-881-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:40
Date Received: 07/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236962
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-12
 Client ID: PB-881-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-13

Date Collected: 07/12/22 12:00

Client ID: PB-881-13-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.2		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-14

Date Collected: 07/12/22 12:10

Client ID: PB-881-14-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.1		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-15

Date Collected: 07/12/22 12:20

Client ID: PB-881-15-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.4		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-16

Date Collected: 07/12/22 12:30

Client ID: PB-881-16-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.9		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-17

Date Collected: 07/12/22 12:40

Client ID: PB-881-17-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.7		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236962

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236962-18

Date Collected: 07/12/22 12:50

Client ID: PB-881-18-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236962-21

Date Collected: 07/12/22 00:00

Client ID: DUP-41

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.0		%	0.100	NA	1	-	07/13/22 10:35	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236962

Report Date: 07/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18,21 QC Batch ID: WG1662302-1 QC Sample: L2236962-01 Client ID: PB-881-01-SS01						
Solids, Total	94.9	94.5	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-01A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236962-01B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-01C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-01D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-01F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-02A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-02B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-02C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-02D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-02F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-03A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-03B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-03C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-03D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-03F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-04A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-04B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-04C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-04D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-04F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-05A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-05B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-05C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-05D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-05F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-06A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-06B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-06C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-06D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-06F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-07A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236962-07B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-07C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-07D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-07F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-08A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-08B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-08C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-08D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-08F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-09A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-09B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-09C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-09D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-09F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-10A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-10B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-10C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-10D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-10F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-11A	Vial MeOH preserved	A	NA		4.1	Y	Absent		PA-8260HLW(14)
L2236962-11B	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-11C	Vial water preserved	A	NA		4.1	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-11D	Plastic 120ml unpreserved	A	NA		4.1	Y	Absent		TS(7)
L2236962-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.1	Y	Absent		PB-TI(180)
L2236962-11F	Glass 120ml/4oz unpreserved	A	NA		4.1	Y	Absent		PA-PAH(14)
L2236962-12A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-12B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-12C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-12D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-12E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-12F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-13A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-13B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-13C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-13D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-13F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236962**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-14A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-14B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-14C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-14D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-14F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-15A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-15B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-15C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-15D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-15E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-15F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-16A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-16B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-16C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-16D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-16E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-16F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-17A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-17B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-17C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-17D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-17E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-17F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-18A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260HLW(14)
L2236962-18B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-18C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260HLW(14)
L2236962-18D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

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Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236962-18E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-18F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)
L2236962-19A	Vial HCl preserved	B	NA		3.8	Y	Absent		PA-8260(14)
L2236962-19B	Vial HCl preserved	B	NA		3.8	Y	Absent		PA-8260(14)
L2236962-19C	Vial HCl preserved	B	NA		3.8	Y	Absent		8011(14)
L2236962-19D	Plastic 250ml HNO3 preserved	B	<2	<2	3.8	Y	Absent		PB-6020T-PPB(180)
L2236962-19E	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		PA-PAHSIM-LVI(7)
L2236962-19F	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		PA-PAHSIM-LVI(7)
L2236962-20A	Vial HCl preserved	B	NA		3.8	Y	Absent		PA-8260(14)
L2236962-20B	Vial HCl preserved	B	NA		3.8	Y	Absent		PA-8260(14)
L2236962-20C	Vial HCl preserved	B	NA		3.8	Y	Absent		8011(14)
L2236962-20D	Plastic 250ml HNO3 preserved	B	<2	<2	3.8	Y	Absent		PB-6020T-PPB(180)
L2236962-20E	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		PA-PAHSIM-LVI(7)
L2236962-20F	Amber 250ml unpreserved	B	7	7	3.8	Y	Absent		PA-PAHSIM-LVI(7)
L2236962-21A	Vial MeOH preserved	B	NA		3.8	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2236962-21B	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-21C	Vial water preserved	B	NA		3.8	Y	Absent	13-JUL-22 10:30	PA-8260H(14),PA-8260HLW(14)
L2236962-21D	Plastic 120ml unpreserved	B	NA		3.8	Y	Absent		TS(7)
L2236962-21E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.8	Y	Absent		PB-TI(180)
L2236962-21F	Glass 120ml/4oz unpreserved	B	NA		3.8	Y	Absent		PA-PAH(14)



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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY
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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

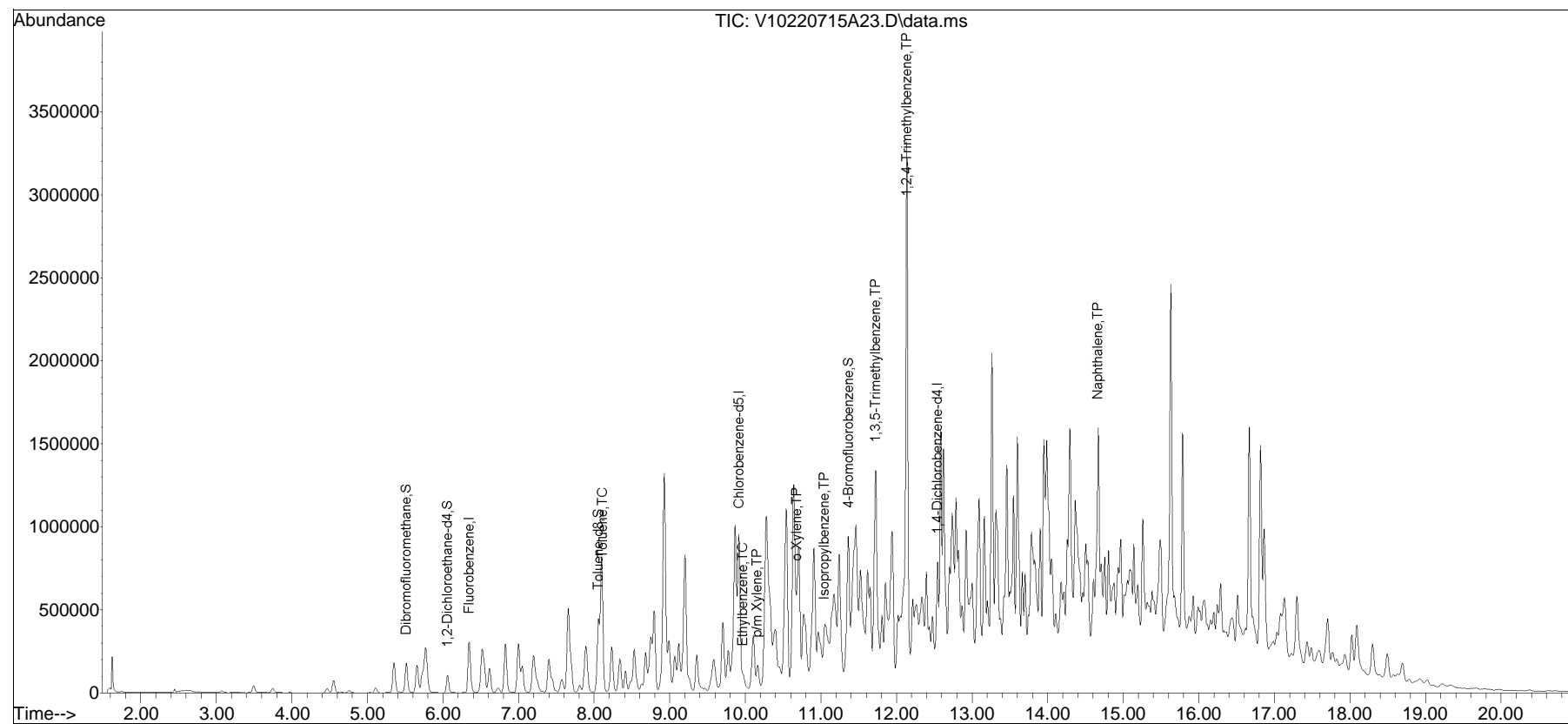
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220715A\
Data File : V10220715A23.D
Acq On : 15 Jul 2022 5:42 pm
Operator : VOA110:MKS
Sample : 12236962-10,31h,2.57,5,0.100,,a,r2f
Misc : WG1664132,ICAL18890
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Jul 16 16:58:01 2022
Quant Method : I:\VOLATILES\VOA110\2022\220715A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list15A\V10220715A01.D•





ANALYTICAL REPORT

Lab Number:	L2236966
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/19/22

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508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236966

Report Date: 07/19/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2236966-01	PB-841-01-SS01	SOIL	PHILADELPHIA, PA	07/12/22 09:30	07/12/22
L2236966-02	PB-841-02-SS01	SOIL	PHILADELPHIA, PA	07/12/22 09:50	07/12/22
L2236966-03	PB-841-03-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:10	07/12/22
L2236966-04	PB-841-04-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:30	07/12/22
L2236966-05	PB-841-05-SS01	SOIL	PHILADELPHIA, PA	07/12/22 10:50	07/12/22
L2236966-06	PB-841-06-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:10	07/12/22
L2236966-07	PB-841-07-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:30	07/12/22
L2236966-08	PB-841-08-SS01	SOIL	PHILADELPHIA, PA	07/12/22 11:50	07/12/22
L2236966-09	PB-841-09-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:10	07/12/22
L2236966-10	PB-841-10-SS01	SOIL	PHILADELPHIA, PA	07/12/22 12:30	07/12/22
L2236966-11	PB-841-11-SS01	SOIL	PHILADELPHIA, PA	07/12/22 13:30	07/12/22
L2236966-12	PB-841-12-SS01	SOIL	PHILADELPHIA, PA	07/12/22 13:40	07/12/22
L2236966-13	PB-841-13-SS01	SOIL	PHILADELPHIA, PA	07/12/22 13:55	07/12/22
L2236966-14	PB-841-14-SS01	SOIL	PHILADELPHIA, PA	07/12/22 14:30	07/12/22
L2236966-15	DUP-42	SOIL	PHILADELPHIA, PA	07/12/22 00:00	07/12/22
L2236966-16	FB-220712-3	WATER	PHILADELPHIA, PA	07/12/22 14:35	07/12/22
L2236966-17	TB-220712	WATER	PHILADELPHIA, PA	07/12/22 00:00	07/12/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2236966-17: Headspace was noted in the sample containers submitted for EDB & DBCP -Method 8011. The analysis was performed.

Microextractables

L2236966-17: Headspace was noted in the sample container utilized for analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/19/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-01
 Client ID: PB-841-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 09:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 18:39
 Analyst: MKS
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00026	1
Benzene	ND		mg/kg	0.00064	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00064	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-02
 Client ID: PB-841-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 09:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 16:48
 Analyst: LAC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-03
 Client ID: PB-841-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 17:15
 Analyst: LAC
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	105		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-04
 Client ID: PB-841-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 17:42
 Analyst: LAC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00039	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.00078	0.00020	1
Toluene	ND		mg/kg	0.00078	0.00042	1
1,2-Dibromoethane	ND		mg/kg	0.00039	0.00023	1
Ethylbenzene	ND		mg/kg	0.00078	0.00011	1
p/m-Xylene	ND		mg/kg	0.0016	0.00044	1
o-Xylene	ND		mg/kg	0.00078	0.00023	1
Xylenes, Total	ND		mg/kg	0.00078	0.00023	1
Isopropylbenzene	ND		mg/kg	0.00078	0.00008	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00026	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-05
 Client ID: PB-841-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 18:09
 Analyst: LAC
 Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	107		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-06
 Client ID: PB-841-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 18:36
 Analyst: LAC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-07
 Client ID: PB-841-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 19:02
 Analyst: LAC
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00087	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00045	1
Toluene	ND		mg/kg	0.0017	0.00095	1
1,2-Dibromoethane	ND		mg/kg	0.00087	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00025	1
p/m-Xylene	ND		mg/kg	0.0035	0.00098	1
o-Xylene	ND		mg/kg	0.0017	0.00051	1
Xylenes, Total	ND		mg/kg	0.0017	0.00051	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	85		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-08
 Client ID: PB-841-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 19:28
 Analyst: LAC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00065	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00033	1
Toluene	ND		mg/kg	0.0013	0.00071	1
1,2-Dibromoethane	ND		mg/kg	0.00065	0.00038	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00073	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-09
 Client ID: PB-841-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 19:54
 Analyst: LAC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0055	0.00055	1
Benzene	ND		mg/kg	0.0014	0.00045	1
1,2-Dichloroethane	ND		mg/kg	0.0027	0.00070	1
Toluene	ND		mg/kg	0.0027	0.0015	1
1,2-Dibromoethane	ND		mg/kg	0.0014	0.00080	1
Ethylbenzene	ND		mg/kg	0.0027	0.00039	1
p/m-Xylene	ND		mg/kg	0.0055	0.0015	1
o-Xylene	ND		mg/kg	0.0027	0.00080	1
Xylenes, Total	ND		mg/kg	0.0027	0.00080	1
Isopropylbenzene	ND		mg/kg	0.0027	0.00030	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0055	0.00053	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0055	0.00091	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-10
 Client ID: PB-841-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 20:21
 Analyst: LAC
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00035	1
Xylenes, Total	ND		mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	85		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-11
 Client ID: PB-841-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 20:47
 Analyst: LAC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00069	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	ND		mg/kg	0.0014	0.00075	1
1,2-Dibromoethane	ND		mg/kg	0.00069	0.00040	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0028	0.00077	1
o-Xylene	ND		mg/kg	0.0014	0.00040	1
Xylenes, Total	ND		mg/kg	0.0014	0.00040	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	108		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-12
 Client ID: PB-841-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 21:41
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	0.00020	J	mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-13
 Client ID: PB-841-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:55
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 16:50
 Analyst: NLK
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00086	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	ND		mg/kg	0.0017	0.00094	1
1,2-Dibromoethane	ND		mg/kg	0.00086	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0035	0.00097	1
o-Xylene	ND		mg/kg	0.0017	0.00050	1
Xylenes, Total	ND		mg/kg	0.0017	0.00050	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00033	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-14
 Client ID: PB-841-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 17:10
 Analyst: NLK
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00024	1
Benzene	0.00032	J	mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-15
 Client ID: DUP-42
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 17:30
 Analyst: NLK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	115		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-16
 Client ID: FB-220712-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:35
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 12:32
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-16
 Client ID: FB-220712-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:35
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 10:53
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-17
 Client ID: TB-220712
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 12:38
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-17
 Client ID: TB-220712
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/15/22 11:16
 Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	119		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 10:38
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/14/22 14:02

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 16-17 Batch: WG1662837-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 11:31
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02-11 Batch: WG1663911-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	103		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:14
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1664129-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/16/22 14:32
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 13-15 Batch: WG1664163-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/15/22 09:44
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 16-17 Batch: WG1664179-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	97		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/17/22 15:00
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 12 Batch: WG1664220-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	104		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236966

Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 16-17 Batch: WG1662837-2									
1,2-Dibromoethane	102		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02-11 Batch: WG1663911-3 WG1663911-4								
Methyl tert butyl ether	84		81		66-130	4		30
Benzene	84		79		70-130	6		30
1,2-Dichloroethane	84		81		70-130	4		30
Toluene	84		79		70-130	6		30
1,2-Dibromoethane	92		87		70-130	6		30
Ethylbenzene	84		79		70-130	6		30
p/m-Xylene	89		83		70-130	7		30
o-Xylene	87		83		70-130	5		30
Isopropylbenzene	82		78		70-130	5		30
1,3,5-Trimethylbenzene	82		79		70-130	4		30
1,2,4-Trimethylbenzene	81		78		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	99		99		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	83		83		70-130
Dibromofluoromethane	106		103		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1664129-3 WG1664129-4								
Methyl tert butyl ether	115		114		66-130	1		30
Benzene	103		102		70-130	1		30
1,2-Dichloroethane	97		96		70-130	1		30
Toluene	103		102		70-130	1		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	100		99		70-130	1		30
p/m-Xylene	100		99		70-130	1		30
o-Xylene	101		100		70-130	1		30
Isopropylbenzene	100		99		70-130	1		30
1,3,5-Trimethylbenzene	98		97		70-130	1		30
1,2,4-Trimethylbenzene	101		100		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	92		93		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 13-15 Batch: WG1664163-3 WG1664163-4								
Methyl tert butyl ether	91		88		66-130	3		30
Benzene	82		78		70-130	5		30
1,2-Dichloroethane	87		84		70-130	4		30
Toluene	75		72		70-130	4		30
1,2-Dibromoethane	85		82		70-130	4		30
Ethylbenzene	81		77		70-130	5		30
p/m-Xylene	82		78		70-130	5		30
o-Xylene	84		81		70-130	4		30
Isopropylbenzene	82		77		70-130	6		30
1,3,5-Trimethylbenzene	83		79		70-130	5		30
1,2,4-Trimethylbenzene	82		78		70-130	5		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	101		101		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 16-17 Batch: WG1664179-3 WG1664179-4								
Methyl tert butyl ether	94		96		63-130	2		20
Benzene	94		95		70-130	1		20
1,2-Dichloroethane	93		94		70-130	1		20
Toluene	100		100		70-130	0		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	110		120		70-130	9		20
1,3,5-Trimethylbenzene	100		110		64-130	10		20
1,2,4-Trimethylbenzene	100		110		70-130	10		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		95		70-130
Toluene-d8	110		109		70-130
4-Bromofluorobenzene	121		123		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 12 Batch: WG1664220-3 WG1664220-4								
Methyl tert butyl ether	89		89		66-130	0		30
Benzene	94		94		70-130	0		30
1,2-Dichloroethane	89		88		70-130	1		30
Toluene	94		96		70-130	2		30
1,2-Dibromoethane	94		98		70-130	4		30
Ethylbenzene	94		94		70-130	0		30
p/m-Xylene	98		99		70-130	1		30
o-Xylene	94		96		70-130	2		30
Isopropylbenzene	91		90		70-130	1		30
1,3,5-Trimethylbenzene	90		89		70-130	1		30
1,2,4-Trimethylbenzene	88		87		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		99		70-130
Toluene-d8	99		101		70-130
4-Bromofluorobenzene	83		82		70-130
Dibromofluoromethane	106		103		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-01
 Client ID: PB-841-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 09:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:26
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	94		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-02
 Client ID: PB-841-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 09:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 22:19
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	101		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-03
 Client ID: PB-841-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 22:41
 Analyst: EK
 Percent Solids: 97%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.020	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.13	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	97		23-120
2-Fluorobiphenyl	93		30-120
4-Terphenyl-d14	98		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-04
 Client ID: PB-841-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:48
 Analyst: EK
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-05
 Client ID: PB-841-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:12
 Analyst: EK
 Percent Solids: 98%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.020	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.017	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.13	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	91		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-06
 Client ID: PB-841-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 00:11
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-07
 Client ID: PB-841-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 01:40
 Analyst: EK
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	0.032	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.038	J	mg/kg	0.12	0.021	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.037	J	mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	72		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-08
 Client ID: PB-841-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 00:33
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-09
 Client ID: PB-841-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 00:56
 Analyst: EK
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	0.026	J	mg/kg	0.19	0.018	1
Phenanthrene	0.20		mg/kg	0.11	0.023	1
Anthracene	0.062	J	mg/kg	0.11	0.036	1
Pyrene	0.35		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.22		mg/kg	0.11	0.021	1
Chrysene	0.22		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.28		mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.23		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	0.11	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	70		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-10
 Client ID: PB-841-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:34
 Analyst: EK
 Percent Solids: 97%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	94		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	89		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-11
 Client ID: PB-841-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 23:04
 Analyst: EK
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-12
 Client ID: PB-841-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 01:18
 Analyst: EK
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.022	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-13
 Client ID: PB-841-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:55
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/19/22 15:24
 Analyst: JG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	0.036	J	mg/kg	0.18	0.017	1
Phenanthrene	0.39		mg/kg	0.11	0.022	1
Anthracene	0.088	J	mg/kg	0.11	0.034	1
Pyrene	0.41		mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.24		mg/kg	0.11	0.020	1
Chrysene	0.21		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	0.26		mg/kg	0.11	0.030	1
Benzo(a)pyrene	0.22		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.14		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	60		30-120
4-Terphenyl-d14	64		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-14
 Client ID: PB-841-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/19/22 15:48
 Analyst: JG
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	0.032	J	mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	0.054	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.035	J	mg/kg	0.11	0.020	1
Chrysene	0.044	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	0.061	J	mg/kg	0.11	0.031	1
Benzo(a)pyrene	0.044	J	mg/kg	0.14	0.044	1
Benzo(ghi)perylene	0.039	J	mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	66		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-15
 Client ID: DUP-42
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/14/22 21:56
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 02:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.020	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.13	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.13	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	98		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-16
 Client ID: FB-220712-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 14:35
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 16:03
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	32		23-120
2-Fluorobiphenyl	33		15-120
4-Terphenyl-d14	35	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 15:15
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 07/13/22 21:10

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 16 Batch: WG1662556-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	31		23-120
2-Fluorobiphenyl	32		15-120
4-Terphenyl-d14	34	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/14/22 17:49
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-15 Batch: WG1662622-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	69		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 16 Batch: WG1662556-2 WG1662556-3								
Naphthalene	57		57		40-140	0		40
Fluorene	58		62		40-140	7		40
Phenanthrene	57		61		40-140	7		40
Anthracene	57		61		40-140	7		40
Pyrene	61		64		26-127	5		40
Benzo(a)anthracene	59		62		40-140	5		40
Chrysene	57		63		40-140	10		40
Benzo(b)fluoranthene	60		70		40-140	15		40
Benzo(a)pyrene	61		65		40-140	6		40
Benzo(ghi)perylene	58		61		40-140	5		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	27		29		23-120
2-Fluorobiphenyl	29		30		15-120
4-Terphenyl-d14	30	Q	33	Q	41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-15 Batch: WG1662622-2 WG1662622-3								
Naphthalene	78		87		40-140	11		50
Fluorene	81		90		40-140	11		50
Phenanthrene	77		87		40-140	12		50
Anthracene	80		91		40-140	13		50
Pyrene	74		83		35-142	11		50
Benzo(a)anthracene	80		87		40-140	8		50
Chrysene	81		91		40-140	12		50
Benzo(b)fluoranthene	76		84		40-140	10		50
Benzo(a)pyrene	86		94		40-140	9		50
Benzo(ghi)perylene	71		78		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	88		98		23-120
2-Fluorobiphenyl	81		85		30-120
4-Terphenyl-d14	80		88		18-120



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-01

Date Collected: 07/12/22 09:30

Client ID: PB-841-01-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.27		mg/kg	2.07	0.111	1	07/13/22 21:00	07/18/22 14:51	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-02

Date Collected: 07/12/22 09:50

Client ID: PB-841-02-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.32		mg/kg	1.98	0.106	1	07/14/22 09:10	07/18/22 10:11	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-03
 Client ID: PB-841-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.07		mg/kg	2.01	0.108	1	07/14/22 09:10	07/18/22 10:15	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-04
 Client ID: PB-841-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 10:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.88		mg/kg	2.00	0.107	1	07/14/22 09:10	07/18/22 10:58	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-05

Date Collected: 07/12/22 10:50

Client ID: PB-841-05-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 98%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.54		mg/kg	2.00	0.107	1	07/14/22 09:10	07/18/22 11:03	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-06
 Client ID: PB-841-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.07		mg/kg	2.21	0.118	1	07/14/22 09:10	07/18/22 11:07	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-07
 Client ID: PB-841-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.11		mg/kg	2.48	0.133	1	07/14/22 09:10	07/18/22 11:12	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-08
 Client ID: PB-841-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 11:50
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.00		mg/kg	2.04	0.109	1	07/14/22 09:10	07/18/22 11:16	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-09
 Client ID: PB-841-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:10
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.00		mg/kg	2.17	0.116	1	07/14/22 09:10	07/18/22 11:21	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-10
 Client ID: PB-841-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.76		mg/kg	2.02	0.108	1	07/14/22 09:10	07/18/22 11:25	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-11

Date Collected: 07/12/22 13:30

Client ID: PB-841-11-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.51		mg/kg	2.06	0.110	1	07/14/22 09:10	07/18/22 11:30	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-12
 Client ID: PB-841-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:40
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.72		mg/kg	2.24	0.120	1	07/14/22 09:10	07/18/22 11:34	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-13

Date Collected: 07/12/22 13:55

Client ID: PB-841-13-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	93.9		mg/kg	2.10	0.113	1	07/14/22 09:10	07/18/22 12:02	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-14

Date Collected: 07/12/22 14:30

Client ID: PB-841-14-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	38.9		mg/kg	2.08	0.111	1	07/14/22 09:10	07/18/22 12:07	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-15
 Client ID: DUP-42
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 00:00
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.60		mg/kg	2.00	0.107	1	07/14/22 09:10	07/18/22 12:11	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-16

Date Collected: 07/12/22 14:35

Client ID: FB-220712-3

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 16:58	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 16 Batch: WG1662468-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/13/22 17:44	07/17/22 14:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1662480-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/13/22 21:00	07/18/22 11:53	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02-15 Batch: WG1662657-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/14/22 09:10	07/18/22 09:57	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 Batch: WG1662468-2								
Lead, Total	103		-		80-120	-		
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1662480-2 SRM Lot Number: D113-540								
Lead, Total	76		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 02-15 Batch: WG1662657-2 SRM Lot Number: D113-540								
Lead, Total	90		-		72-128	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 QC Batch ID: WG1662468-3 QC Sample: L2236962-19 Client ID: MS Sample												
Lead, Total	ND	530	530.0	100		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1662480-3 QC Sample: L2236962-01 Client ID: MS Sample												
Lead, Total	1.62J	43.9	22.6	51	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 02-15 QC Batch ID: WG1662657-3 QC Sample: L2235484-01 Client ID: MS Sample												
Lead, Total	9.34	54.7	43.2	62	Q	-	-		75-125	-		20



Lab Duplicate Analysis *Batch Quality Control*

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236966

Report Date: 07/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 16 QC Batch ID: WG1662468-4 QC Sample: L2236962-19 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1662480-4 QC Sample: L2236962-01 Client ID: DUP Sample						
Lead, Total	1.62J	1.66J	mg/kg	NC		20



INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-01

Date Collected: 07/12/22 09:30

Client ID: PB-841-01-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.7		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-02
Client ID: PB-841-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 09:50
Date Received: 07/12/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.9		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-03

Date Collected: 07/12/22 10:10

Client ID: PB-841-03-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.6		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-04

Date Collected: 07/12/22 10:30

Client ID: PB-841-04-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.2		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-05

Date Collected: 07/12/22 10:50

Client ID: PB-841-05-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	98.0		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-06

Date Collected: 07/12/22 11:10

Client ID: PB-841-06-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.3		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-07

Date Collected: 07/12/22 11:30

Client ID: PB-841-07-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.9		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-08

Date Collected: 07/12/22 11:50

Client ID: PB-841-08-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.2		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-09

Date Collected: 07/12/22 12:10

Client ID: PB-841-09-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-10
 Client ID: PB-841-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 12:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.7		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-11
 Client ID: PB-841-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/12/22 13:30
 Date Received: 07/12/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.2		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-12

Date Collected: 07/12/22 13:40

Client ID: PB-841-12-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.2		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-13

Date Collected: 07/12/22 13:55

Client ID: PB-841-13-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.4		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

SAMPLE RESULTS

Lab ID: L2236966-14

Date Collected: 07/12/22 14:30

Client ID: PB-841-14-SS01

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.4		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**SAMPLE RESULTS**

Lab ID: L2236966-15

Date Collected: 07/12/22 00:00

Client ID: DUP-42

Date Received: 07/12/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.4		%	0.100	NA	1	-	07/13/22 10:26	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2236966

Report Date: 07/19/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-15 QC Batch ID: WG1662270-1 QC Sample: L2236966-01 Client ID: PB-841-01-SS01						
Solids, Total	95.7	95.9	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236966-01A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-01B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-01C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-01D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-01F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-02A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-02B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-02C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-02D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-02F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-03A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-03B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-03C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-03D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-03F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-04A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-04B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-04C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-04D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236966-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-04F	Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-04G	Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-05A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-05B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-05C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-05D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-05F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-06A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-06B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-06C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-06D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-06F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-07A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-07B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-07C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-07D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-07F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-08A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-08B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-08C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-08D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-08F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-09A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236966-09B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-09C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-09D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-09E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-09F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-10A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-10B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-10C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-10D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-10F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-11A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-11B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-11C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-11D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-11E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-11F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-12A	Vial MeOH preserved	A	NA		5.4	Y	Absent		PA-8260HLW(14)
L2236966-12B	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-12C	Vial water preserved	A	NA		5.4	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-12D	Plastic 2oz unpreserved for TS	A	NA		5.4	Y	Absent		TS(7)
L2236966-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		PB-TI(180)
L2236966-12F	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		PA-PAH(14)
L2236966-13A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-13B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-13C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-13D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-13E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2236966**Project Number:** 200.00135.006**Report Date:** 07/19/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2236966-13F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-14A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-14B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-14C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-14D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2236966-14E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2236966-14F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2236966-15A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2236966-15B	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-15C	Vial water preserved	B	NA		4.3	Y	Absent	13-JUL-22 09:11	PA-8260HLW(14)
L2236966-15D	Metals Only-Glass 60mL/2oz unpreserved	B	N/A	N/A	4.3	Y	Absent		PB-TI(180)
L2236966-15E	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		TS(7),PA-PAH(14)
L2236966-16A	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2236966-16B	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2236966-16C	Vial HCl preserved	B	NA		4.3	Y	Absent		8011(14)
L2236966-16D	Plastic 250ml HNO3 preserved	B	<2	<2	4.3	Y	Absent		PB-6020T-PPB(180)
L2236966-16E	Amber 250ml unpreserved	B	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2236966-16F	Amber 250ml unpreserved	B	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2236966-17A	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2236966-17B	Vial HCl preserved	B	NA		4.3	N	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2236966
Report Date: 07/19/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2236966

Project Number: 200.00135.006

Report Date: 07/19/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

2

CHAIN OF CUSTODY

PAGE 1 OF 2



Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

ALPHA Lab ID (Lab Use Only) Sample ID Collection Date Time Sample Matrix Sampler's Initials

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Time	Sample Matrix	Sampler's Initials
36966-01	PB-841-01-SS01	7/12	930	S	TS
-02	PB-841-02-SS01		950		
-03	PB-841-03-SS01		1010		
-04	PB-841-04-SS01		1030		
-05	PB-841-05-SS01		1050		
-06	PB-841-06-SS01		1110		
-07	PB-841-07-SS01		1130		
-08	PB-841-08-SS01		1150		
-09	PB-841-09-SS01		1210		
-10	PB-841-10-SS01		1230		

Date Rec'd in Lab: 7/13/22 ALPHA Job #: L 2236ald

Report Information Data Deliverables
 FAX EMAIL
 ADEx Add'l Deliverables

Billing Information
 Same as Client info PO #: 3562

Regulatory Requirements/Report Limits
 State/Fed Program Criteria

ANALYSIS

Shortlist 1-5	SAMPLE HANDLING												TOTAL # BOTTLES	
	Filtration			Preservation			Other							
	<input type="checkbox"/> Done	<input checked="" type="checkbox"/> Not Needed	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do
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	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Container Type: G Preservative: -

Relinquished By: [Signature] Date/Time: 7/12/22
 Received By: [Signature] Date/Time: 7/13/22

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

CHAIN OF CUSTODY

PAGE 2 OF 2



Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3286

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/13/22

ALPHA Job #: L2236966

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

SHORTLIST 1-5
 VOC. PORTION OF SL

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Lab to do
 Preservation
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
-11	PB-841-11-5501	7/12	1330	S	FS
-12	PB-841-12-5501		1340	S	
-13	PB-841-13-5501		1355	S	
-14	PB-841-14-5501		1430	S	
-15	DUP-42		-	S	
-16	PB-226712-3		1435	W	
-17	TB-226712				

Container Type

Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	7/12/22 1455	<i>[Signature]</i>	7/12/22 1455
<i>[Signature]</i>	7/12/22 1800	<i>[Signature]</i>	7/12/22 1800
<i>[Signature]</i>	7/13/22 0900	<i>[Signature]</i>	7/13/22 0900

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

PADEP Short List Analytical Suites per Table III-5:

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene



ANALYTICAL REPORT

Lab Number:	L2237246
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/20/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2237246-01	PB-826-01-SS01	SOIL	PHILADELPHIA, PA	07/13/22 10:00	07/13/22
L2237246-02	PB-826-02-SS01	SOIL	PHILADELPHIA, PA	07/13/22 10:30	07/13/22
L2237246-03	PB-826-03-SS01	SOIL	PHILADELPHIA, PA	07/13/22 11:00	07/13/22
L2237246-04	PB-826-04-SS01	SOIL	PHILADELPHIA, PA	07/13/22 11:30	07/13/22
L2237246-05	PB-826-05-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:00	07/13/22
L2237246-06	PB-826-06-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:30	07/13/22
L2237246-07	PB-826-07-SS01	SOIL	PHILADELPHIA, PA	07/13/22 13:00	07/13/22
L2237246-08	PB-826-08-SS01	SOIL	PHILADELPHIA, PA	07/13/22 13:30	07/13/22
L2237246-09	PB-826-09-SS01	SOIL	PHILADELPHIA, PA	07/13/22 14:00	07/13/22
L2237246-10	PB-826-10-SS01	SOIL	PHILADELPHIA, PA	07/13/22 14:15	07/13/22
L2237246-11	FB-071322-2	WATER	PHILADELPHIA, PA	07/13/22 14:20	07/13/22
L2237246-12	TB-071322	WATER	PHILADELPHIA, PA	07/13/22 00:00	07/13/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

L2237246-01 through -10: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

The WG1663069-3 MS recovery, performed on L2237246-02, is outside the acceptance criteria for lead (66%). A post digestion spike was performed and yielded an unacceptable recovery for lead (73%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/20/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-01
 Client ID: PB-826-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 10:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 17:49
 Analyst: NLK
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00032	J	mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00069	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	ND		mg/kg	0.0014	0.00075	1
1,2-Dibromoethane	ND		mg/kg	0.00069	0.00040	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0028	0.00077	1
o-Xylene	ND		mg/kg	0.0014	0.00040	1
Xylenes, Total	ND		mg/kg	0.0014	0.00040	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-02
 Client ID: PB-826-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 10:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 18:09
 Analyst: NLK
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0010	J	mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-03
 Client ID: PB-826-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 18:29
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.020		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00071	1
o-Xylene	ND		mg/kg	0.0013	0.00037	1
Xylenes, Total	ND		mg/kg	0.0013	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-04
 Client ID: PB-826-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 18:49
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0012	J	mg/kg	0.0039	0.00039	1
Benzene	ND		mg/kg	0.00097	0.00032	1
1,2-Dichloroethane	ND		mg/kg	0.0019	0.00050	1
Toluene	ND		mg/kg	0.0019	0.0010	1
1,2-Dibromoethane	ND		mg/kg	0.00097	0.00057	1
Ethylbenzene	ND		mg/kg	0.0019	0.00027	1
p/m-Xylene	ND		mg/kg	0.0039	0.0011	1
o-Xylene	ND		mg/kg	0.0019	0.00056	1
Xylenes, Total	ND		mg/kg	0.0019	0.00056	1
Isopropylbenzene	ND		mg/kg	0.0019	0.00021	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0039	0.00037	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0039	0.00065	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-05
 Client ID: PB-826-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 19:08
 Analyst: NLK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	102		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-06
 Client ID: PB-826-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 19:28
 Analyst: NLK
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.013		mg/kg	0.0030	0.00030	1
Benzene	ND		mg/kg	0.00075	0.00025	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00039	1
Toluene	ND		mg/kg	0.0015	0.00082	1
1,2-Dibromoethane	ND		mg/kg	0.00075	0.00044	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0030	0.00084	1
o-Xylene	ND		mg/kg	0.0015	0.00044	1
Xylenes, Total	ND		mg/kg	0.0015	0.00044	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0030	0.00029	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0030	0.00050	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-07
 Client ID: PB-826-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 19:48
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.016		mg/kg	0.0024	0.00025	1
Benzene	ND		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-08
 Client ID: PB-826-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 20:07
 Analyst: NLK
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00033	J	mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00055	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	102		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-09
Client ID: PB-826-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 07/16/22 20:27
Analyst: NLK
Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0027	0.00027	1
Benzene	ND		mg/kg	0.00068	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00035	1
Toluene	ND		mg/kg	0.0014	0.00073	1
1,2-Dibromoethane	ND		mg/kg	0.00068	0.00040	1
Ethylbenzene	ND		mg/kg	0.0014	0.00019	1
p/m-Xylene	ND		mg/kg	0.0027	0.00076	1
o-Xylene	ND		mg/kg	0.0014	0.00039	1
Xylenes, Total	ND		mg/kg	0.0014	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0027	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0027	0.00045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-10
 Client ID: PB-826-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:15
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 20:47
 Analyst: NLK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0029	0.00029	1
Benzene	ND		mg/kg	0.00073	0.00024	1
1,2-Dichloroethane	ND		mg/kg	0.0015	0.00038	1
Toluene	ND		mg/kg	0.0015	0.00080	1
1,2-Dibromoethane	ND		mg/kg	0.00073	0.00043	1
Ethylbenzene	ND		mg/kg	0.0015	0.00021	1
p/m-Xylene	ND		mg/kg	0.0029	0.00082	1
o-Xylene	ND		mg/kg	0.0015	0.00043	1
Xylenes, Total	ND		mg/kg	0.0015	0.00043	1
Isopropylbenzene	ND		mg/kg	0.0015	0.00016	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0029	0.00028	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0029	0.00049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-11
 Client ID: FB-071322-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:20
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 16:36
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-11
 Client ID: FB-071322-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:20
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 09:38
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-12
 Client ID: TB-071322
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 16:43
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-12
 Client ID: TB-071322
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 09:15
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 16:10
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 11-12 Batch: WG1663450-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/16/22 08:52
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 11-12 Batch: WG1663980-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/16/22 14:32
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-10 Batch: WG1664163-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 11-12 Batch: WG1663450-2									
1,2-Dibromoethane	97		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 11-12 Batch: WG1663980-3 WG1663980-4								
Methyl tert butyl ether	97		96		63-130	1		20
Benzene	94		93		70-130	1		20
1,2-Dichloroethane	97		95		70-130	2		20
Toluene	96		97		70-130	1		20
Ethylbenzene	97		98		70-130	1		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	110		110		70-130	0		20
1,3,5-Trimethylbenzene	100		100		64-130	0		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		95		70-130
Toluene-d8	106		107		70-130
4-Bromofluorobenzene	115		115		70-130
Dibromofluoromethane	93		92		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-10 Batch: WG1664163-3 WG1664163-4								
Methyl tert butyl ether	91		88		66-130	3		30
Benzene	82		78		70-130	5		30
1,2-Dichloroethane	87		84		70-130	4		30
Toluene	75		72		70-130	4		30
1,2-Dibromoethane	85		82		70-130	4		30
Ethylbenzene	81		77		70-130	5		30
p/m-Xylene	82		78		70-130	5		30
o-Xylene	84		81		70-130	4		30
Isopropylbenzene	82		77		70-130	6		30
1,3,5-Trimethylbenzene	83		79		70-130	5		30
1,2,4-Trimethylbenzene	82		78		70-130	5		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	99		99		70-130
Dibromofluoromethane	101		101		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-01
 Client ID: PB-826-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 10:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 11:54
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	124	Q	23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	94		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-02
 Client ID: PB-826-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 10:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 12:17
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	120		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	92		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-03
 Client ID: PB-826-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 12:40
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	93		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-04
 Client ID: PB-826-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 13:04
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	85		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-05
 Client ID: PB-826-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 13:27
 Analyst: EK
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	84		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-06
 Client ID: PB-826-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 13:50
 Analyst: EK
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.034	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	85		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-07
 Client ID: PB-826-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 14:14
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	132	Q	23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-08
 Client ID: PB-826-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 14:37
 Analyst: EK
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	123	Q	23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	74		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-09
 Client ID: PB-826-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 15:01
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-10
 Client ID: PB-826-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:15
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 15:24
 Analyst: EK
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	90		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-11
 Client ID: FB-071322-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:20
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 19:34
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 01:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	0.03	J	ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	51		23-120
2-Fluorobiphenyl	55		15-120
4-Terphenyl-d14	59		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/15/22 08:47
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-10 Batch: WG1663095-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	101		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/15/22 18:13
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/15/22 01:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 11 Batch: WG1663135-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	39		23-120
2-Fluorobiphenyl	43		15-120
4-Terphenyl-d14	43		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-10 Batch: WG1663095-2 WG1663095-3								
Naphthalene	76		78		40-140	3		50
Fluorene	84		83		40-140	1		50
Phenanthrene	78		77		40-140	1		50
Anthracene	81		79		40-140	3		50
Pyrene	82		80		35-142	2		50
Benzo(a)anthracene	85		84		40-140	1		50
Chrysene	86		84		40-140	2		50
Benzo(b)fluoranthene	87		91		40-140	4		50
Benzo(a)pyrene	90		95		40-140	5		50
Benzo(ghi)perylene	85		78		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	113		116		23-120
2-Fluorobiphenyl	78		78		30-120
4-Terphenyl-d14	91		89		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 11 Batch: WG1663135-2 WG1663135-3								
Naphthalene	90		84		40-140	7		40
Fluorene	90		88		40-140	2		40
Phenanthrene	91		85		40-140	7		40
Anthracene	90		86		40-140	5		40
Pyrene	96		91		26-127	5		40
Benzo(a)anthracene	94		90		40-140	4		40
Chrysene	90		86		40-140	5		40
Benzo(b)fluoranthene	97		90		40-140	7		40
Benzo(a)pyrene	95		88		40-140	8		40
Benzo(ghi)perylene	94		90		40-140	4		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	43		39		23-120
2-Fluorobiphenyl	43		42		15-120
4-Terphenyl-d14	48		45		41-149



METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-01
 Client ID: PB-826-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 10:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.14	J	mg/kg	4.68	0.251	2	07/14/22 20:35	07/19/22 08:21	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-02
 Client ID: PB-826-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 10:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.36	J	mg/kg	4.04	0.217	2	07/14/22 20:35	07/19/22 09:21	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-03
 Client ID: PB-826-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.14	J	mg/kg	4.08	0.219	2	07/14/22 20:35	07/19/22 08:26	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-04

Date Collected: 07/13/22 11:30

Client ID: PB-826-04-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.88	J	mg/kg	4.14	0.222	2	07/14/22 20:35	07/19/22 08:31	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-05
 Client ID: PB-826-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.46	J	mg/kg	4.14	0.222	2	07/14/22 20:35	07/19/22 09:12	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-06
 Client ID: PB-826-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.10	J	mg/kg	10.4	0.555	5	07/14/22 20:35	07/19/22 09:54	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-07

Date Collected: 07/13/22 13:00

Client ID: PB-826-07-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.19	J	mg/kg	10.3	0.551	5	07/14/22 20:35	07/19/22 10:08	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-08
 Client ID: PB-826-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.67	J	mg/kg	4.69	0.251	2	07/14/22 20:35	07/19/22 09:31	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-09

Date Collected: 07/13/22 14:00

Client ID: PB-826-09-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.55		mg/kg	4.83	0.259	2	07/14/22 20:35	07/19/22 09:35	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-10

Date Collected: 07/13/22 14:15

Client ID: PB-826-10-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.72	J	mg/kg	4.13	0.221	2	07/14/22 20:35	07/19/22 09:40	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-11

Date Collected: 07/13/22 14:20

Client ID: FB-071322-2

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 20:03	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-10 Batch: WG1663069-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/14/22 20:35	07/19/22 07:16	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 11 Batch: WG1663390-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 18:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-10 Batch: WG1663069-2 SRM Lot Number: D113-540								
Lead, Total	82		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 11 Batch: WG1663390-2								
Lead, Total	102		-		80-120	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1663069-3 QC Sample: L2237246-02 Client ID: PB-826-02-SS01												
Lead, Total	3.36J	43.7	28.9	66	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 11 QC Batch ID: WG1663390-3 WG1663390-4 QC Sample: L2237672-03 Client ID: MS Sample												
Lead, Total	0.9553J	530	569.8	108		561.0	106		75-125	2		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237246

Report Date: 07/20/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1663069-4 QC Sample: L2237246-02 Client ID: PB-826-02-SS01						
Lead, Total	3.36J	2.92J	mg/kg	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-01
 Client ID: PB-826-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 10:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.0		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-02

Date Collected: 07/13/22 10:30

Client ID: PB-826-02-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.7		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237246**Project Number:** 200.00135.006**Report Date:** 07/20/22**SAMPLE RESULTS**

Lab ID: L2237246-03

Date Collected: 07/13/22 11:00

Client ID: PB-826-03-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.0		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-04
 Client ID: PB-826-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.9		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237246**Project Number:** 200.00135.006**Report Date:** 07/20/22**SAMPLE RESULTS**

Lab ID: L2237246-05

Date Collected: 07/13/22 12:00

Client ID: PB-826-05-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.2		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-06

Date Collected: 07/13/22 12:30

Client ID: PB-826-06-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.6		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237246

Project Number: 200.00135.006

Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-07

Date Collected: 07/13/22 13:00

Client ID: PB-826-07-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.2		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237246**Project Number:** 200.00135.006**Report Date:** 07/20/22**SAMPLE RESULTS**

Lab ID: L2237246-08

Date Collected: 07/13/22 13:30

Client ID: PB-826-08-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.2		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237246
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237246-09
 Client ID: PB-826-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.5		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237246**Project Number:** 200.00135.006**Report Date:** 07/20/22**SAMPLE RESULTS**

Lab ID: L2237246-10

Date Collected: 07/13/22 14:15

Client ID: PB-826-10-SS01

Date Received: 07/13/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.5		%	0.100	NA	1	-	07/15/22 09:47	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237246

Report Date: 07/20/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10 QC Batch ID: WG1663198-1 QC Sample: L2237246-01 Client ID: PB-826-01-SS01						
Solids, Total	82.0	80.2	%	2		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237246**Project Number:** 200.00135.006**Report Date:** 07/20/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237246-01A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2237246-01B	Vial water preserved	B	NA		4.3	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-01C	Vial water preserved	B	NA		4.3	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-01D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2237246-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2237246-01F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2237246-02A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237246-02B	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-02C	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-02D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2237246-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237246-02F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237246-03A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237246-03B	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-03C	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-03D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2237246-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237246-03F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237246-04A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237246-04B	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-04C	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-04D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237246**Project Number:** 200.00135.006**Report Date:** 07/20/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237246-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237246-04F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237246-05A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2237246-05B	Vial water preserved	B	NA		4.3	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-05C	Vial water preserved	B	NA		4.3	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-05D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2237246-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2237246-05F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2237246-06A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2237246-06B	Vial water preserved	B	NA		4.3	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-06C	Vial water preserved	B	NA		4.3	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-06D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2237246-06E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2237246-06F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237246-07A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237246-07B	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-07C	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-07D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2237246-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237246-07F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237246-08A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237246-08B	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-08C	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-08D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2237246-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237246-08F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237246-09A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237246-09B	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237246**Project Number:** 200.00135.006**Report Date:** 07/20/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237246-09C	Vial water preserved	A	NA		4.0	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-09D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		TS(7)
L2237246-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237246-09F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237246-10A	Vial MeOH preserved	B	NA		4.3	Y	Absent		PA-8260HLW(14)
L2237246-10B	Vial water preserved	B	NA		4.3	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-10C	Vial water preserved	B	NA		4.3	Y	Absent	14-JUL-22 15:03	PA-8260HLW(14)
L2237246-10D	Plastic 2oz unpreserved for TS	B	NA		4.3	Y	Absent		TS(7)
L2237246-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.3	Y	Absent		PB-TI(180)
L2237246-10F	Glass 120ml/4oz unpreserved	B	NA		4.3	Y	Absent		PA-PAH(14)
L2237246-11A	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2237246-11B	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2237246-11C	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2237246-11D	Vial HCl preserved	B	NA		4.3	Y	Absent		8011(14)
L2237246-11E	Vial HCl preserved	B	NA		4.3	Y	Absent		8011(14)
L2237246-11F	Plastic 250ml HNO3 preserved	B	<2	<2	4.3	Y	Absent		PB-6020T-PPB(180)
L2237246-11G	Amber 250ml unpreserved	B	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2237246-11H	Amber 250ml unpreserved	B	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2237246-12A	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2237246-12B	Vial HCl preserved	B	NA		4.3	Y	Absent		PA-8260(14)
L2237246-12D	Vial HCl preserved	B	NA		4.3	Y	Absent		8011(14)
L2237246-12E	Vial HCl preserved	B	NA		4.3	Y	Absent		8011(14)

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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Lab Number: L2237246

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

PADEP Short List Analytical Suites per Table III-5:

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene



ANALYTICAL REPORT

Lab Number:	L2237250
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/20/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2237250-01	PB-882-03-SS01	SOIL	PHILADELPHIA, PA	07/13/22 11:30	07/13/22
L2237250-02	PB-882-04-SS01	SOIL	PHILADELPHIA, PA	07/13/22 11:40	07/13/22
L2237250-03	PB-882-05-SS01	SOIL	PHILADELPHIA, PA	07/13/22 11:50	07/13/22
L2237250-04	PB-882-06-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:00	07/13/22
L2237250-05	PB-882-07-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:10	07/13/22
L2237250-06	PB-882-08-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:20	07/13/22
L2237250-07	PB-882-09-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:30	07/13/22
L2237250-08	PB-882-11-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:40	07/13/22
L2237250-09	PB-882-12-SS01	SOIL	PHILADELPHIA, PA	07/13/22 12:50	07/13/22
L2237250-10	PB-882-13-SS01	SOIL	PHILADELPHIA, PA	07/13/22 13:00	07/13/22
L2237250-11	FB-071322-1	WATER	PHILADELPHIA, PA	07/13/22 14:00	07/13/22
L2237250-12	DUP-43	SOIL	PHILADELPHIA, PA	07/13/22 00:00	07/13/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2237250-06: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (191%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2237250-07: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (167%) and 4-bromofluorobenzene (422%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Total Metals

L2237250-01 through -10: The sample has an elevated detection limit for lead, due to the dilution required by matrix interferences encountered during analysis.

L2237250-12: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative

Date: 07/20/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-01
 Client ID: PB-882-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 10:01
 Analyst: NLK
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-02
 Client ID: PB-882-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 10:28
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.00058		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	0.00014	J	mg/kg	0.00095	0.00013	1
p/m-Xylene	0.00060	J	mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	0.00060	J	mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	0.00038	J	mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	0.00096	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-03
 Client ID: PB-882-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 10:55
 Analyst: NLK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	107		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-04
 Client ID: PB-882-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 11:22
 Analyst: NLK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-05
 Client ID: PB-882-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:10
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 11:49
 Analyst: NLK
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-06
 Client ID: PB-882-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:20
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 09:17
 Analyst: NLK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	0.017		mg/kg	0.00089	0.00012	1
p/m-Xylene	0.0045		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	0.0045		mg/kg	0.00089	0.00026	1
Isopropylbenzene	0.039		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	0.016		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	0.041		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	127		70-130
4-Bromofluorobenzene	191	Q	70-130
Dibromofluoromethane	76		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-07
 Client ID: PB-882-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 10:09
 Analyst: NLK
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	0.00079	J	mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	0.0014		mg/kg	0.0011	0.00032	1
Xylenes, Total	0.0014		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.042		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	167	Q	70-130
4-Bromofluorobenzene	422	Q	70-130
Dibromofluoromethane	73		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-08
 Client ID: PB-882-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 12:16
 Analyst: NLK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0016	J	mg/kg	0.0017	0.00017	1
Benzene	0.00032	J	mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00049	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	0.00010	J	mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-09
 Client ID: PB-882-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 12:42
 Analyst: NLK
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	0.00037	J	mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-10
 Client ID: PB-882-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 13:09
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00092	0.00024	1
Toluene	ND		mg/kg	0.00092	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00092	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00092	0.00027	1
Xylenes, Total	ND		mg/kg	0.00092	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00092	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-11
 Client ID: FB-071322-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 16:49
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-11
 Client ID: FB-071322-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/16/22 10:01
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-12
 Client ID: DUP-43
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 13:35
 Analyst: NLK
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00020	1
Benzene	0.00021	J	mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	109		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 16:10
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 11 Batch: WG1663450-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/16/22 08:52
Analyst: TMS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 11 Batch: WG1663980-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/18/22 09:34
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-05,08-10,12 Batch: WG1664674-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 06-07 Batch: WG1665306-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	90		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237250

Project Number: 200.00135.006

Report Date: 07/20/22

Parameter	<i>LCS</i> %Recovery	<i>Qual</i>	<i>LCSD</i> %Recovery	<i>Qual</i>	<i>%Recovery</i> Limits	<i>RPD</i>	<i>Qual</i>	<i>RPD</i> Limits	<i>Column</i>
Microextractables by GC - Westborough Lab Associated sample(s): 11 Batch: WG1663450-2									
1,2-Dibromoethane	97		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237250

Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 11 Batch: WG1663980-3 WG1663980-4								
Methyl tert butyl ether	97		96		63-130	1		20
Benzene	94		93		70-130	1		20
1,2-Dichloroethane	97		95		70-130	2		20
Toluene	96		97		70-130	1		20
Ethylbenzene	97		98		70-130	1		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	110		110		70-130	0		20
1,3,5-Trimethylbenzene	100		100		64-130	0		20
1,2,4-Trimethylbenzene	100		100		70-130	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		95		70-130
Toluene-d8	106		107		70-130
4-Bromofluorobenzene	115		115		70-130
Dibromofluoromethane	93		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-05,08-10,12 Batch: WG1664674-3 WG1664674-4								
Methyl tert butyl ether	87		86		66-130	1		30
Benzene	87		87		70-130	0		30
1,2-Dichloroethane	85		86		70-130	1		30
Toluene	88		89		70-130	1		30
1,2-Dibromoethane	93		93		70-130	0		30
Ethylbenzene	87		87		70-130	0		30
p/m-Xylene	91		92		70-130	1		30
o-Xylene	89		90		70-130	1		30
Isopropylbenzene	85		85		70-130	0		30
1,3,5-Trimethylbenzene	85		85		70-130	0		30
1,2,4-Trimethylbenzene	84		83		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		96		70-130
Toluene-d8	99		101		70-130
4-Bromofluorobenzene	84		84		70-130
Dibromofluoromethane	106		105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237250

Project Number: 200.00135.006

Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 06-07 Batch: WG1665306-3 WG1665306-4								
Methyl tert butyl ether	100		98		66-130	2		30
Benzene	88		84		70-130	5		30
1,2-Dichloroethane	69	Q	66	Q	70-130	4		30
Toluene	88		85		70-130	3		30
1,2-Dibromoethane	85		83		70-130	2		30
Ethylbenzene	85		82		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	92		89		70-130	3		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	104		103		70-130
Dibromofluoromethane	78		77		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-01
 Client ID: PB-882-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 15:47
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	112		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	85		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-02
 Client ID: PB-882-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:11
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	106		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	97		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-03
 Client ID: PB-882-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:34
 Analyst: EK
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	79		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-04
 Client ID: PB-882-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:57
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	115		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-05
 Client ID: PB-882-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:10
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 17:21
 Analyst: EK
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	133	Q	23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	101		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-06
 Client ID: PB-882-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:20
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 17:44
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.6		mg/kg	0.19	0.024	1
Fluorene	0.40		mg/kg	0.19	0.019	1
Phenanthrene	0.78		mg/kg	0.12	0.024	1
Anthracene	0.041	J	mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	139	Q	23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	91		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-07
 Client ID: PB-882-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:57
 Analyst: SLR
 Percent Solids: 79%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.060	J	mg/kg	0.20	0.025	1
Fluorene	0.99		mg/kg	0.20	0.020	1
Phenanthrene	1.7		mg/kg	0.12	0.025	1
Anthracene	0.076	J	mg/kg	0.12	0.040	1
Pyrene	0.062	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.024	J	mg/kg	0.12	0.023	1
Chrysene	0.094	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.035	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	91		30-120
4-Terphenyl-d14	98		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-08
 Client ID: PB-882-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 18:07
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	142	Q	23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	103		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-09
 Client ID: PB-882-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 18:30
 Analyst: EK
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	139	Q	23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-10
 Client ID: PB-882-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 18:54
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	125	Q	23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	78		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-11
 Client ID: FB-071322-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/15/22 19:51
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 01:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.05	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	37		23-120
2-Fluorobiphenyl	42		15-120
4-Terphenyl-d14	52		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-12
 Client ID: DUP-43
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/15/22 16:33
 Analyst: SLR
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/14/22 20:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	57		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/14/22 17:49
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 07/14/22 02:24

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 12 Batch: WG1662622-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/15/22 08:47
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 07/14/22 20:25

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-10 Batch: WG1663095-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	101		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/15/22 18:13
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/15/22 01:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 11 Batch: WG1663135-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	39		23-120
2-Fluorobiphenyl	43		15-120
4-Terphenyl-d14	43		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 12 Batch: WG1662622-2 WG1662622-3								
Naphthalene	78		87		40-140	11		50
Fluorene	81		90		40-140	11		50
Phenanthrene	77		87		40-140	12		50
Anthracene	80		91		40-140	13		50
Pyrene	74		83		35-142	11		50
Benzo(a)anthracene	80		87		40-140	8		50
Chrysene	81		91		40-140	12		50
Benzo(b)fluoranthene	76		84		40-140	10		50
Benzo(a)pyrene	86		94		40-140	9		50
Benzo(ghi)perylene	71		78		40-140	9		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	88		98		23-120
2-Fluorobiphenyl	81		85		30-120
4-Terphenyl-d14	80		88		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-10 Batch: WG1663095-2 WG1663095-3								
Naphthalene	76		78		40-140	3		50
Fluorene	84		83		40-140	1		50
Phenanthrene	78		77		40-140	1		50
Anthracene	81		79		40-140	3		50
Pyrene	82		80		35-142	2		50
Benzo(a)anthracene	85		84		40-140	1		50
Chrysene	86		84		40-140	2		50
Benzo(b)fluoranthene	87		91		40-140	4		50
Benzo(a)pyrene	90		95		40-140	5		50
Benzo(ghi)perylene	85		78		40-140	9		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	113		116		23-120
2-Fluorobiphenyl	78		78		30-120
4-Terphenyl-d14	91		89		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 11 Batch: WG1663135-2 WG1663135-3								
Naphthalene	90		84		40-140	7		40
Fluorene	90		88		40-140	2		40
Phenanthrene	91		85		40-140	7		40
Anthracene	90		86		40-140	5		40
Pyrene	96		91		26-127	5		40
Benzo(a)anthracene	94		90		40-140	4		40
Chrysene	90		86		40-140	5		40
Benzo(b)fluoranthene	97		90		40-140	7		40
Benzo(a)pyrene	95		88		40-140	8		40
Benzo(ghi)perylene	94		90		40-140	4		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	43		39		23-120
2-Fluorobiphenyl	43		42		15-120
4-Terphenyl-d14	48		45		41-149



METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-01
 Client ID: PB-882-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.65		mg/kg	4.74	0.254	2	07/14/22 20:35	07/19/22 09:45	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-02
 Client ID: PB-882-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.10		mg/kg	4.59	0.246	2	07/14/22 20:35	07/19/22 09:49	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-03
 Client ID: PB-882-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.09		mg/kg	4.50	0.241	2	07/14/22 20:35	07/19/22 10:12	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-04
 Client ID: PB-882-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.96		mg/kg	4.56	0.244	2	07/14/22 20:35	07/19/22 10:17	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-05
 Client ID: PB-882-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:10
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.62		mg/kg	4.66	0.250	2	07/14/22 20:35	07/19/22 10:22	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-06
 Client ID: PB-882-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:20
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.78	J	mg/kg	4.65	0.249	2	07/14/22 20:35	07/19/22 10:26	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-07
 Client ID: PB-882-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.45	J	mg/kg	4.80	0.257	2	07/14/22 20:35	07/19/22 10:31	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-08
 Client ID: PB-882-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:40
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.69		mg/kg	4.61	0.247	2	07/14/22 20:35	07/19/22 10:35	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-09
 Client ID: PB-882-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:50
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.37		mg/kg	4.65	0.249	2	07/14/22 20:35	07/19/22 10:40	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-10
 Client ID: PB-882-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.83		mg/kg	4.54	0.243	2	07/14/22 20:35	07/19/22 10:44	EPA 3050B	1,6010D	EW



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-11
 Client ID: FB-071322-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 14:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 20:08	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-12
 Client ID: DUP-43
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
 Date Received: 07/13/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	11.8		mg/kg	4.44	0.238	2	07/14/22 21:44	07/19/22 20:35	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 12 Batch: WG1663051-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/14/22 21:44	07/19/22 00:37	1,6010D	BV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-10 Batch: WG1663069-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/14/22 20:35	07/19/22 07:16	1,6010D	EW

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 11 Batch: WG1663390-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 18:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237250

Project Number: 200.00135.006

Report Date: 07/20/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Metals - Mansfield Lab Associated sample(s): 12 Batch: WG1663051-2 SRM Lot Number: D113-540								
Lead, Total	86		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 01-10 Batch: WG1663069-2 SRM Lot Number: D113-540								
Lead, Total	82		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 11 Batch: WG1663390-2								
Lead, Total	102		-		80-120	-		

Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1663051-3 QC Sample: L2237250-12 Client ID: DUP-43												
Lead, Total	11.8	49.3	50.6	79		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1663069-3 QC Sample: L2237246-02 Client ID: MS Sample												
Lead, Total	3.36J	43.7	28.9	66	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 11 QC Batch ID: WG1663390-3 WG1663390-4 QC Sample: L2237672-03 Client ID: MS Sample												
Lead, Total	0.9553J	530	569.8	108		561.0	106		75-125	2		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1663051-4 QC Sample: L2237250-12 Client ID: DUP-43						
Lead, Total	11.8	11.4	mg/kg	3		20
Total Metals - Mansfield Lab Associated sample(s): 01-10 QC Batch ID: WG1663069-4 QC Sample: L2237246-02 Client ID: DUP Sample						
Lead, Total	3.36J	2.92J	mg/kg	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-01
Client ID: PB-882-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:30
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-02
Client ID: PB-882-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:40
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.8		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-03
Client ID: PB-882-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 11:50
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.4		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-04
Client ID: PB-882-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:00
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-05
Client ID: PB-882-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:10
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-06
Client ID: PB-882-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:20
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.0		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-07
Client ID: PB-882-09-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:30
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	79.0		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-08
Client ID: PB-882-11-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:40
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.1		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-09
Client ID: PB-882-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 12:50
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.0		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-10
Client ID: PB-882-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 13:00
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

SAMPLE RESULTS

Lab ID: L2237250-12
Client ID: DUP-43
Sample Location: PHILADELPHIA, PA

Date Collected: 07/13/22 00:00
Date Received: 07/13/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	07/15/22 13:26	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-10,12 QC Batch ID: WG1663380-1 QC Sample: L2237250-01 Client ID: PB-882-03-SS01						
Solids, Total	82.2	81.8	%	0		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237250**Project Number:** 200.00135.006**Report Date:** 07/20/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237250-01A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-01B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-01C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-01D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-01F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-02A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-02B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-02C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-02D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-02F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-03A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-03B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-03C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-03D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-03F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-04A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-04B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-04C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-04D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237250**Project Number:** 200.00135.006**Report Date:** 07/20/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237250-04F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-05A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-05B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-05C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-05D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-05F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-06A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-06B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-06C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-06D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-06F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-07A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-07B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-07C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-07D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-07F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-08A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-08B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-08C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-08D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-08F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-09A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-09B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-09C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237250**Project Number:** 200.00135.006**Report Date:** 07/20/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237250-09D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-09F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-10A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-10B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-10C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-10D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-10E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-10F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)
L2237250-11A	Vial HCl preserved	A	NA		4.6	Y	Absent		PA-8260(14)
L2237250-11B	Vial HCl preserved	A	NA		4.6	Y	Absent		PA-8260(14)
L2237250-11C	Vial HCl preserved	A	NA		4.6	Y	Absent		PA-8260(14)
L2237250-11D	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14)
L2237250-11E	Vial HCl preserved	A	NA		4.6	Y	Absent		8011(14)
L2237250-11F	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2237250-11G	Amber 250ml unpreserved	A	7	7	4.6	Y	Absent		PA-PAHSIM-LVI(7)
L2237250-11H	Plastic 250ml HNO3 preserved	A	<2	<2	4.6	Y	Absent		PB-6020T-PPB(180)
L2237250-12A	Vial MeOH preserved	A	NA		4.6	Y	Absent		PA-8260HLW(14)
L2237250-12B	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-12C	Vial water preserved	A	NA		4.6	Y	Absent	14-JUL-22 14:19	PA-8260HLW(14)
L2237250-12D	Plastic 2oz unpreserved for TS	A	NA		4.6	Y	Absent		TS(7)
L2237250-12E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.6	Y	Absent		PB-TI(180)
L2237250-12F	Glass 120ml/4oz unpreserved	A	NA		4.6	Y	Absent		PA-PAH(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237250
Report Date: 07/20/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237250

Project Number: 200.00135.006

Report Date: 07/20/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 2

Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: _____ Time: _____

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax: _____

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/14/22

ALPHA Job #: L2237250

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program

Criteria

ANALYSIS

Short list 1-5

ALPHA Lab ID	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
27250	1 PB-882-03-5501	7/13/22	1130	S	W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	2 PB-882-04-5501		1140			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	3 PB-882-05-5501		1150			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	4 PB-882-06-5501		1200			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	5 PB-882-07-5501		1210			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	6 PB-882-08-5501		1220			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	7 PB-882-09-5501		1230			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	8 PB-882-11-5501		1240			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	9 PB-882-12-5501		1250			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	10 PB-882-13-5501		1300			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Preservation
 Lab to do
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
27250	1 PB-882-03-5501	7/13/22	1130	S	W
	2 PB-882-04-5501		1140		
	3 PB-882-05-5501		1150		
	4 PB-882-06-5501		1200		
	5 PB-882-07-5501		1210		
	6 PB-882-08-5501		1220		
	7 PB-882-09-5501		1230		
	8 PB-882-11-5501		1240		
	9 PB-882-12-5501		1250		
	10 PB-882-13-5501		1300		

Container Type: G
 Preservative: -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	7/13/22	STJ-AAL	7/13/22 15:35
<i>[Signature]</i>	7/13/22 18:00	<i>[Signature]</i>	7-13-22
<i>[Signature]</i>	7-13-22	<i>[Signature]</i>	7/13/22 21:00

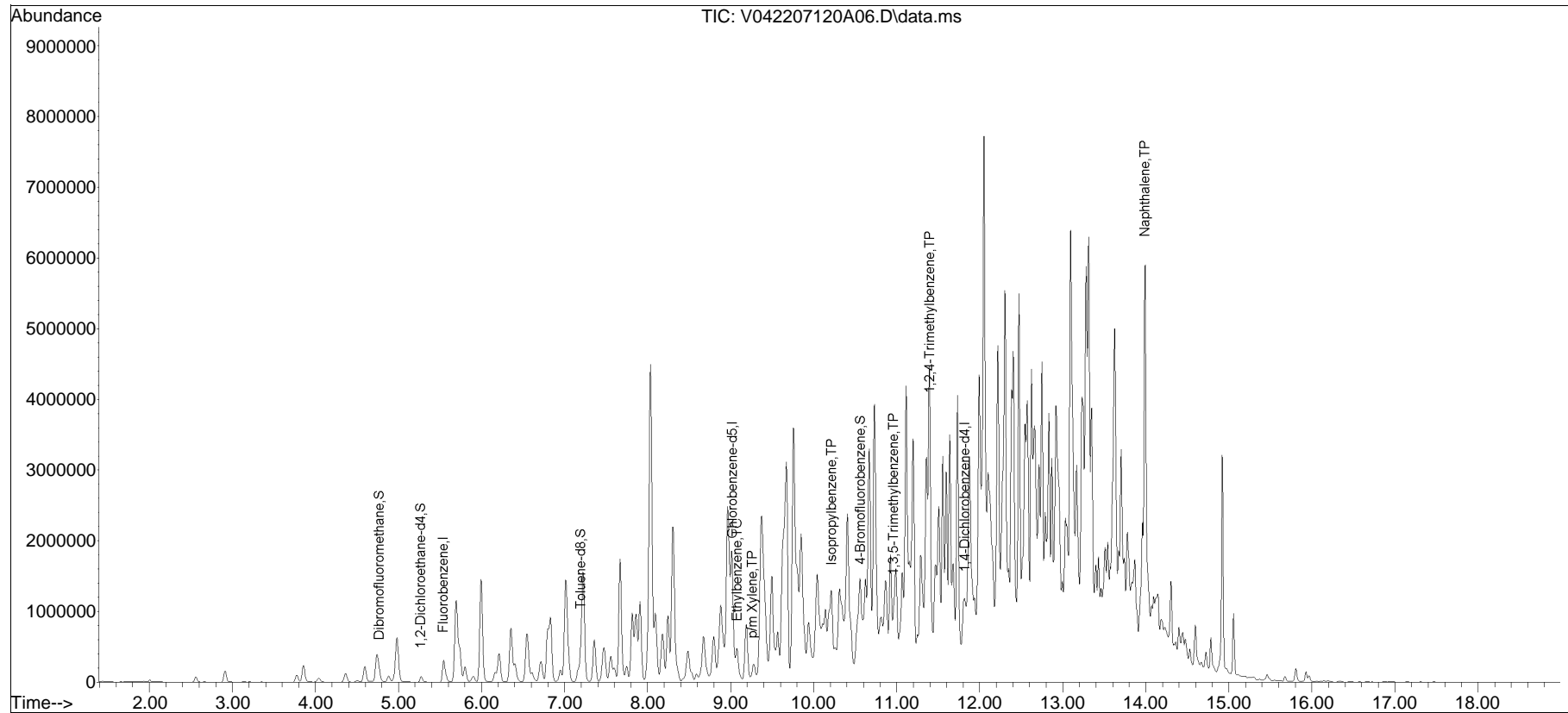
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\2207120A\
Data File : V042207120A06.D
Acq On : 20 Jul 2022 9:17 am
Operator : VOA104:NLK
Sample : L2237250-06,31,6.67,5,,B,R2F
Misc : WG1665306,ICAL19119
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jul 20 13:39:16 2022
Quant Method : I:\VOLATILES\VOA104\2022\2207120A\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list120A\V042207120A01.D•

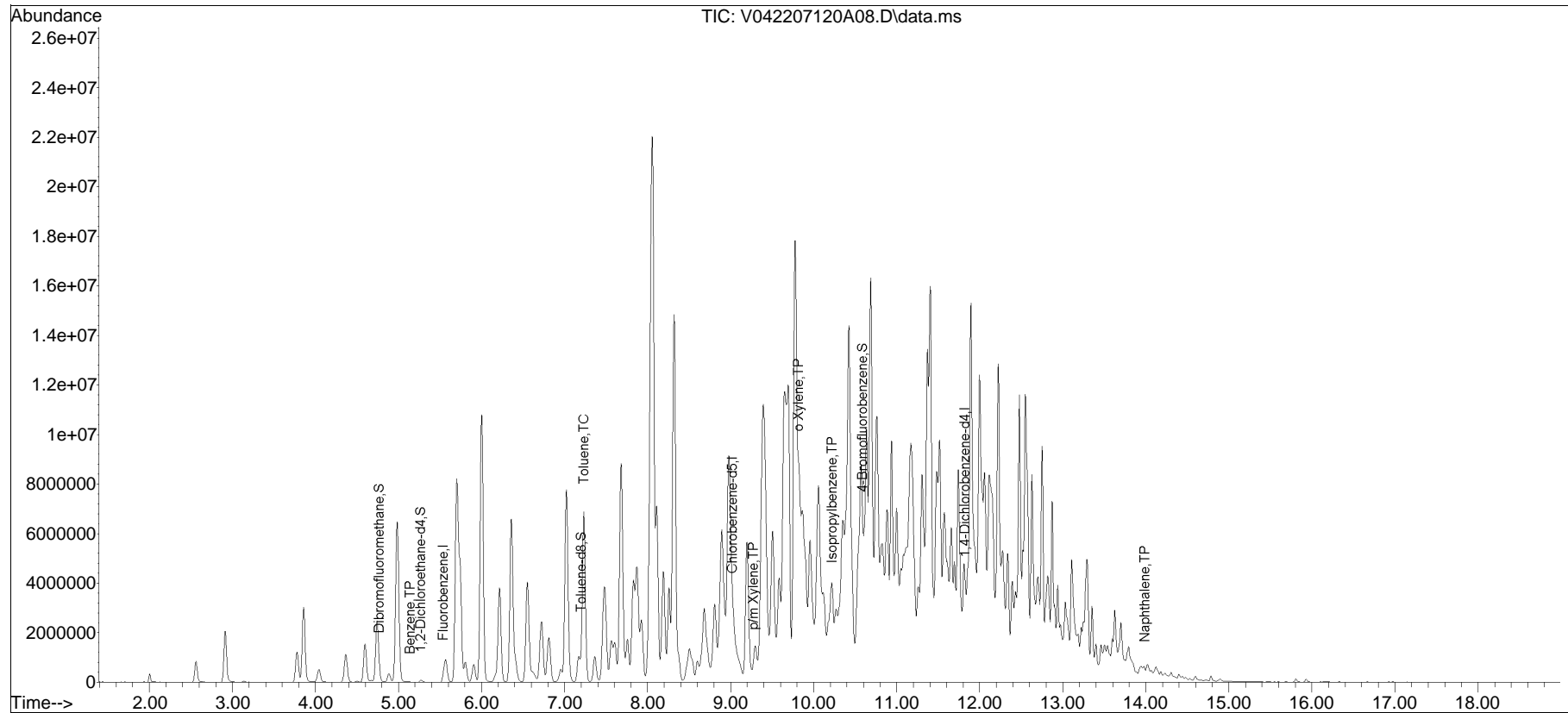


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\2207120A\
Data File : V042207120A08.D
Acq On : 20 Jul 2022 10:09 am
Operator : VOA104:NLK
Sample : L2237250-07,31,5.81,5,,B,R2F
Misc : WG1665306,ICAL19119
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jul 20 13:41:00 2022
Quant Method : I:\VOLATILES\VOA104\2022\2207120A\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list120A\V042207120A01.D•





ANALYTICAL REPORT

Lab Number:	L2237705
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/21/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237705

Report Date: 07/21/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2237705-01	PB-826-11-SS01	SOIL	PHILADELPHIA, PA	07/14/22 08:15	07/14/22
L2237705-02	PB-826-12-SS01	SOIL	PHILADELPHIA, PA	07/14/22 08:30	07/14/22
L2237705-03	PB-826-13-SS01	SOIL	PHILADELPHIA, PA	07/14/22 08:45	07/14/22
L2237705-04	PB-826-14-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:00	07/14/22
L2237705-05	PB-826-15-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:15	07/14/22
L2237705-06	PB-826-16-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:30	07/14/22
L2237705-07	PB-884-08-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:15	07/14/22
L2237705-08	PB-884-09-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:30	07/14/22
L2237705-09	PB-884-13-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:45	07/14/22
L2237705-10	PB-884-14-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:00	07/14/22
L2237705-11	PB-884-15-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:15	07/14/22
L2237705-12	PB-884-16-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:30	07/14/22
L2237705-13	PB-884-17-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:45	07/14/22
L2237705-14	PB-884-18-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:00	07/14/22
L2237705-15	PB-884-19-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:15	07/14/22
L2237705-16	PB-884-20-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:30	07/14/22
L2237705-17	PB-884-21-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:45	07/14/22
L2237705-18	PB-884-23-SS01	SOIL	PHILADELPHIA, PA	07/14/22 13:00	07/14/22
L2237705-19	DUP-44	SOIL	PHILADELPHIA, PA	07/14/22 00:00	07/14/22
L2237705-20	FB-071422-3	WATER	PHILADELPHIA, PA	07/14/22 13:05	07/14/22
L2237705-21	FB-071422-4	WATER	PHILADELPHIA, PA	07/14/22 13:10	07/14/22
L2237705-22	TB-071422	WATER	PHILADELPHIA, PA	07/14/22 00:00	07/14/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2237705-07: The surrogate recovery was outside the acceptance criteria for 1,2-dichloroethane-d4 (131%) due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. The sample was analyzed as a High Level Methanol in order to quantitate result(s) within the calibration range. The result should be considered estimated, and is qualified with an E flag, for any compound that exceeded the calibration on the initial Low Level analysis. The results of both analyses are reported. Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to vial discrepancies.

L2237705-08: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (139%) and 4-bromofluorobenzene (149%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2237705-11: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (157%) and 4-bromofluorobenzene (157%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2237705-19: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (143%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Semivolatile Organics by SIM

The WG1663477-1 Method Blank, associated with L2237705-20 and -21, has a concentration above the reporting limit for benzo(b)fluoranthene. Since the associated sample concentrations are either greater than 10x the blank concentration or non-detect to the RL for this target analyte, no corrective action is required. Any results detected below the reporting limit are qualified with a "B".

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Case Narrative (continued)

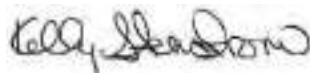
Total Metals

L2237705-01, -02, -03, -07, and -14: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

The WG1663364-3 MS recovery, performed on L2237705-15, is outside the acceptance criteria for lead (58%). A post digestion spike was performed and yielded an unacceptable recovery of 32%. The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 07/21/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-01
 Client ID: PB-826-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 14:07
 Analyst: NLK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00059	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00064	1
1,2-Dibromoethane	ND		mg/kg	0.00059	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0024	0.00066	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-02
 Client ID: PB-826-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 14:36
 Analyst: NLK
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00061	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-03
 Client ID: PB-826-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 15:06
 Analyst: NLK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0028	0.00028	1
Benzene	ND		mg/kg	0.00070	0.00023	1
1,2-Dichloroethane	ND		mg/kg	0.0014	0.00036	1
Toluene	ND		mg/kg	0.0014	0.00076	1
1,2-Dibromoethane	ND		mg/kg	0.00070	0.00041	1
Ethylbenzene	ND		mg/kg	0.0014	0.00020	1
p/m-Xylene	ND		mg/kg	0.0028	0.00079	1
o-Xylene	ND		mg/kg	0.0014	0.00041	1
Xylenes, Total	ND		mg/kg	0.0014	0.00041	1
Isopropylbenzene	ND		mg/kg	0.0014	0.00015	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0028	0.00027	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0028	0.00047	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-04
 Client ID: PB-826-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 21:40
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	ND		mg/kg	0.031	0.010	1
1,2-Dichloroethane	ND		mg/kg	0.062	0.016	1
Toluene	ND		mg/kg	0.062	0.034	1
1,2-Dibromoethane	ND		mg/kg	0.031	0.018	1
Ethylbenzene	0.73		mg/kg	0.062	0.0087	1
p/m-Xylene	0.16		mg/kg	0.12	0.035	1
o-Xylene	0.054	J	mg/kg	0.062	0.018	1
Xylenes, Total	0.21	J	mg/kg	0.062	0.018	1
Isopropylbenzene	0.28		mg/kg	0.062	0.0068	1
1,3,5-Trimethylbenzene	4.4		mg/kg	0.12	0.012	1
1,2,4-Trimethylbenzene	12.		mg/kg	0.12	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	122		70-130
Dibromofluoromethane	85		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-05
 Client ID: PB-826-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 16:09
 Analyst: AJK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0034	0.00035	1
Benzene	ND		mg/kg	0.00086	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00044	1
Toluene	ND		mg/kg	0.0017	0.00094	1
1,2-Dibromoethane	ND		mg/kg	0.00086	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0034	0.00097	1
o-Xylene	ND		mg/kg	0.0017	0.00050	1
Xylenes, Total	ND		mg/kg	0.0017	0.00050	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0034	0.00033	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0034	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-06
 Client ID: PB-826-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 16:09
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0036	0.00036	1
Benzene	ND		mg/kg	0.00089	0.00030	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00046	1
Toluene	ND		mg/kg	0.0018	0.00096	1
1,2-Dibromoethane	ND		mg/kg	0.00089	0.00052	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0036	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00052	1
Xylenes, Total	ND		mg/kg	0.0018	0.00052	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00019	1
1,3,5-Trimethylbenzene	0.00089	J	mg/kg	0.0036	0.00034	1
1,2,4-Trimethylbenzene	0.00061	J	mg/kg	0.0036	0.00059	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07
 Client ID: PB-884-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 22:09
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	0.15		mg/kg	0.033	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.065	0.017	1
Toluene	0.082		mg/kg	0.065	0.035	1
1,2-Dibromoethane	ND		mg/kg	0.033	0.019	1
Ethylbenzene	0.14		mg/kg	0.065	0.0092	1
p/m-Xylene	4.9		mg/kg	0.13	0.036	1
o-Xylene	0.50		mg/kg	0.065	0.019	1
Xylenes, Total	5.4		mg/kg	0.065	0.019	1
Isopropylbenzene	0.080		mg/kg	0.065	0.0071	1
1,3,5-Trimethylbenzene	0.66		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	2.1		mg/kg	0.13	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	93		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07
 Client ID: PB-884-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/21/22 06:20
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	0.020		mg/kg	0.00040	0.00013	1
1,2-Dichloroethane	0.00061	J	mg/kg	0.00080	0.00020	1
Toluene	0.00095		mg/kg	0.00080	0.00043	1
1,2-Dibromoethane	ND		mg/kg	0.00040	0.00023	1
Ethylbenzene	0.022		mg/kg	0.00080	0.00011	1
p/m-Xylene	1.4	E	mg/kg	0.0016	0.00045	1
o-Xylene	0.054		mg/kg	0.00080	0.00023	1
Isopropylbenzene	0.014		mg/kg	0.00080	0.00008	1
1,3,5-Trimethylbenzene	0.12		mg/kg	0.0016	0.00015	1
1,2,4-Trimethylbenzene	0.34	E	mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-08
 Client ID: PB-884-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 17:38
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	2.0		mg/kg	0.034	0.011	1
1,2-Dichloroethane	ND		mg/kg	0.068	0.017	1
Toluene	13.		mg/kg	0.068	0.037	1
1,2-Dibromoethane	ND		mg/kg	0.034	0.020	1
Ethylbenzene	6.6		mg/kg	0.068	0.0096	1
p/m-Xylene	28.		mg/kg	0.14	0.038	1
o-Xylene	13.		mg/kg	0.068	0.020	1
Xylenes, Total	41.		mg/kg	0.068	0.020	1
Isopropylbenzene	2.8		mg/kg	0.068	0.0074	1
1,3,5-Trimethylbenzene	3.7		mg/kg	0.14	0.013	1
1,2,4-Trimethylbenzene	12.		mg/kg	0.14	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	71		70-130
Toluene-d8	139	Q	70-130
4-Bromofluorobenzene	149	Q	70-130
Dibromofluoromethane	71		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-09
 Client ID: PB-884-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 16:40
 Analyst: NLK
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-10
 Client ID: PB-884-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 17:11
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0022	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-11
 Client ID: PB-884-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/21/22 09:34
 Analyst: MKS
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.12	0.012	1
Benzene	2.6		mg/kg	0.029	0.0098	1
1,2-Dichloroethane	ND		mg/kg	0.059	0.015	1
Toluene	9.0		mg/kg	0.059	0.032	1
1,2-Dibromoethane	ND		mg/kg	0.029	0.017	1
Ethylbenzene	8.8		mg/kg	0.059	0.0083	1
p/m-Xylene	32.		mg/kg	0.12	0.033	1
o-Xylene	15.		mg/kg	0.059	0.017	1
Xylenes, Total	47.		mg/kg	0.059	0.017	1
Isopropylbenzene	3.6		mg/kg	0.059	0.0064	1
1,3,5-Trimethylbenzene	4.5		mg/kg	0.12	0.011	1
1,2,4-Trimethylbenzene	14.		mg/kg	0.12	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	157	Q	70-130
4-Bromofluorobenzene	157	Q	70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-12
 Client ID: PB-884-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 17:41
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0036	0.00036	1
Benzene	ND		mg/kg	0.00090	0.00030	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00046	1
Toluene	ND		mg/kg	0.0018	0.00097	1
1,2-Dibromoethane	ND		mg/kg	0.00090	0.00052	1
Ethylbenzene	ND		mg/kg	0.0018	0.00025	1
p/m-Xylene	ND		mg/kg	0.0036	0.0010	1
o-Xylene	ND		mg/kg	0.0018	0.00052	1
Xylenes, Total	ND		mg/kg	0.0018	0.00052	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00020	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0036	0.00035	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0036	0.00060	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-13
 Client ID: PB-884-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 18:11
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00024	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	101		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-14
 Client ID: PB-884-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 18:41
 Analyst: NLK
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00054	J	mg/kg	0.0022	0.00022	1
Benzene	0.035		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00059	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	0.024		mg/kg	0.0011	0.00015	1
p/m-Xylene	0.026		mg/kg	0.0022	0.00061	1
o-Xylene	0.0015		mg/kg	0.0011	0.00032	1
Xylenes, Total	0.028		mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.0053		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.010		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	0.033		mg/kg	0.0022	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-15
 Client ID: PB-884-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 19:11
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	0.00036	J	mg/kg	0.00057	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00062	1
1,2-Dibromoethane	ND		mg/kg	0.00057	0.00033	1
Ethylbenzene	0.0024		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.024		mg/kg	0.0023	0.00063	1
o-Xylene	0.026		mg/kg	0.0011	0.00033	1
Xylenes, Total	0.050		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.0044		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.022		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.052		mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	108		70-130
4-Bromofluorobenzene	129		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-16
 Client ID: PB-884-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 19:40
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00022	1
Benzene	ND		mg/kg	0.00055	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00060	1
1,2-Dibromoethane	ND		mg/kg	0.00055	0.00032	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0022	0.00062	1
o-Xylene	ND		mg/kg	0.0011	0.00032	1
Xylenes, Total	ND		mg/kg	0.0011	0.00032	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-17
 Client ID: PB-884-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 20:10
 Analyst: NLK
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00094	0.00024	1
Toluene	ND		mg/kg	0.00094	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00094	0.00028	1
Xylenes, Total	ND		mg/kg	0.00094	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	100		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-18
 Client ID: PB-884-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 06:09
 Analyst: JC
 Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	84		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-19
 Client ID: DUP-44
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 00:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:58
 Analyst: JC
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.14	0.014	1
Benzene	0.068		mg/kg	0.036	0.012	1
1,2-Dichloroethane	ND		mg/kg	0.071	0.018	1
Toluene	0.051	J	mg/kg	0.071	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.036	0.021	1
Ethylbenzene	0.56		mg/kg	0.071	0.010	1
p/m-Xylene	21.		mg/kg	0.14	0.040	1
o-Xylene	8.4		mg/kg	0.071	0.021	1
Xylenes, Total	29.		mg/kg	0.071	0.021	1
Isopropylbenzene	1.0		mg/kg	0.071	0.0077	1
1,3,5-Trimethylbenzene	4.8		mg/kg	0.14	0.014	1
1,2,4-Trimethylbenzene	15.		mg/kg	0.14	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	143	Q	70-130
Dibromofluoromethane	99		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-20
 Client ID: FB-071422-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:05
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:03
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-20
 Client ID: FB-071422-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:05
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 14:16
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	128		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	119		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-21
 Client ID: FB-071422-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:10
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-21
 Client ID: FB-071422-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 14:38
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	131	Q	70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-22
 Client ID: TB-071422
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 00:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:16
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-22
 Client ID: TB-071422
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 00:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 14:59
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	124		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 16:10
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 20-22 Batch: WG1663450-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 07/17/22 13:55
 Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 20-22 Batch: WG1664113-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
1,2-Dibromoethane	ND		ug/l	2.0	0.19
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/18/22 13:35
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03,06,09-10,12-17 Batch: WG1664656-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/18/22 13:35
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 04,07 Batch: WG1664660-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	94		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/18/22 21:42
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 18 Batch: WG1664672-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	104		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
 Analytical Date: 07/19/22 09:51
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 05 Batch: WG1664964-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/19/22 16:38
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 19 Batch: WG1665199-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 08 Batch: WG1665578-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	91		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/20/22 23:10
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07 Batch: WG1665590-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	100		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/21/22 08:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 11 Batch: WG1665734-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	100		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 20-22 Batch: WG1663450-2									
1,2-Dibromoethane	97		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 20-22 Batch: WG1664113-3 WG1664113-4								
Methyl tert butyl ether	90		86		63-130	5		20
Benzene	86		82		70-130	5		20
1,2-Dichloroethane	100		96		70-130	4		20
Toluene	83		84		70-130	1		20
1,2-Dibromoethane	83		82		70-130	1		20
Ethylbenzene	90		91		70-130	1		20
p/m-Xylene	90		90		70-130	0		20
o-Xylene	90		90		70-130	0		20
Isopropylbenzene	86		87		70-130	1		20
1,3,5-Trimethylbenzene	90		92		64-130	2		20
1,2,4-Trimethylbenzene	89		88		70-130	1		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	117		116		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	109		111		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery		RPD	
	%Recovery	Qual	%Recovery	Qual	Limits	RPD	Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03,06,09-10,12-17 Batch: WG1664656-3 WG1664656-4								
Methyl tert butyl ether	115		118		66-130	3		30
Benzene	108		108		70-130	0		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	108		109		70-130	1		30
1,2-Dibromoethane	106		110		70-130	4		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	107		108		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	111		110		70-130	1		30
1,3,5-Trimethylbenzene	107		107		70-130	0		30
1,2,4-Trimethylbenzene	107		108		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	91		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 04,07 Batch: WG1664660-3 WG1664660-4								
Methyl tert butyl ether	115		118		66-130	3		30
Benzene	108		108		70-130	0		30
1,2-Dichloroethane	96		100		70-130	4		30
Toluene	108		109		70-130	1		30
1,2-Dibromoethane	106		110		70-130	4		30
Ethylbenzene	106		107		70-130	1		30
p/m-Xylene	107		108		70-130	1		30
o-Xylene	106		108		70-130	2		30
Isopropylbenzene	111		110		70-130	1		30
1,3,5-Trimethylbenzene	107		107		70-130	0		30
1,2,4-Trimethylbenzene	107		108		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	106		106		70-130
Dibromofluoromethane	91		92		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 18 Batch: WG1664672-3 WG1664672-4								
Methyl tert butyl ether	90		90		66-130	0		30
Benzene	90		90		70-130	0		30
1,2-Dichloroethane	90		90		70-130	0		30
Toluene	90		92		70-130	2		30
1,2-Dibromoethane	96		98		70-130	2		30
Ethylbenzene	89		90		70-130	1		30
p/m-Xylene	94		96		70-130	2		30
o-Xylene	93		94		70-130	1		30
Isopropylbenzene	72		87		70-130	19		30
1,3,5-Trimethylbenzene	85		87		70-130	2		30
1,2,4-Trimethylbenzene	83		86		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	102		100		70-130
Toluene-d8	98		102		70-130
4-Bromofluorobenzene	83		84		70-130
Dibromofluoromethane	106		105		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 05 Batch: WG1664964-3 WG1664964-4								
Methyl tert butyl ether	122		119		66-130	2		30
Benzene	110		103		70-130	7		30
1,2-Dichloroethane	102		100		70-130	2		30
Toluene	108		103		70-130	5		30
1,2-Dibromoethane	109		109		70-130	0		30
Ethylbenzene	107		102		70-130	5		30
p/m-Xylene	109		103		70-130	6		30
o-Xylene	108		103		70-130	5		30
Isopropylbenzene	110		103		70-130	7		30
1,3,5-Trimethylbenzene	107		101		70-130	6		30
1,2,4-Trimethylbenzene	108		102		70-130	6		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		96		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	105		105		70-130
Dibromofluoromethane	93		92		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 19 Batch: WG1665199-3 WG1665199-4								
Methyl tert butyl ether	81		84		66-130	4		30
Benzene	77		80		70-130	4		30
1,2-Dichloroethane	75		78		70-130	4		30
Toluene	71		73		70-130	3		30
1,2-Dibromoethane	79		82		70-130	4		30
Ethylbenzene	72		76		70-130	5		30
p/m-Xylene	73		76		70-130	4		30
o-Xylene	77		80		70-130	4		30
Isopropylbenzene	74		75		70-130	1		30
1,3,5-Trimethylbenzene	74		77		70-130	4		30
1,2,4-Trimethylbenzene	74		77		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	102		101		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 08 Batch: WG1665578-3 WG1665578-4								
Methyl tert butyl ether	100		98		66-130	2		30
Benzene	88		84		70-130	5		30
1,2-Dichloroethane	69	Q	66	Q	70-130	4		30
Toluene	88		85		70-130	3		30
1,2-Dibromoethane	85		83		70-130	2		30
Ethylbenzene	85		82		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	92		89		70-130	3		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	104		103		70-130
Dibromofluoromethane	78		77		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07 Batch: WG1665590-3 WG1665590-4								
Methyl tert butyl ether	102		98		66-130	4		30
Benzene	104		102		70-130	2		30
1,2-Dichloroethane	104		100		70-130	4		30
Toluene	100		99		70-130	1		30
1,2-Dibromoethane	102		98		70-130	4		30
Ethylbenzene	103		101		70-130	2		30
p/m-Xylene	104		103		70-130	1		30
o-Xylene	103		101		70-130	2		30
Isopropylbenzene	97		97		70-130	0		30
1,3,5-Trimethylbenzene	99		98		70-130	1		30
1,2,4-Trimethylbenzene	98		98		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		97		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	98		96		70-130
Dibromofluoromethane	100		99		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 11 Batch: WG1665734-3 WG1665734-4								
Methyl tert butyl ether	91		90		66-130	1		30
Benzene	95		92		70-130	3		30
1,2-Dichloroethane	98		95		70-130	3		30
Toluene	90		87		70-130	3		30
1,2-Dibromoethane	94		91		70-130	3		30
Ethylbenzene	96		92		70-130	4		30
p/m-Xylene	95		91		70-130	4		30
o-Xylene	94		91		70-130	3		30
Isopropylbenzene	95		91		70-130	4		30
1,3,5-Trimethylbenzene	96		91		70-130	5		30
1,2,4-Trimethylbenzene	95		92		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		104		70-130
Toluene-d8	99		98		70-130
4-Bromofluorobenzene	97		96		70-130
Dibromofluoromethane	98		98		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-01
 Client ID: PB-826-11-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 14:40
 Analyst: SLR
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.034	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-02
 Client ID: PB-826-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:02
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	83		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-03
 Client ID: PB-826-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:25
 Analyst: SLR
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	87		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-04
 Client ID: PB-826-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:48
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.32		mg/kg	0.19	0.024	1
Fluorene	0.18	J	mg/kg	0.19	0.019	1
Phenanthrene	0.64		mg/kg	0.12	0.024	1
Anthracene	0.061	J	mg/kg	0.12	0.038	1
Pyrene	0.16		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.030	J	mg/kg	0.12	0.022	1
Chrysene	0.042	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	91		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-05
 Client ID: PB-826-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:11
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.052	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	0.15		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	0.18		mg/kg	0.12	0.019	1
Benzo(a)anthracene	0.069	J	mg/kg	0.12	0.022	1
Chrysene	0.095	J	mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	0.055	J	mg/kg	0.12	0.032	1
Benzo(a)pyrene	0.053	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.041	J	mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	93		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-06
 Client ID: PB-826-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:34
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.025	J	mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07
 Client ID: PB-884-08-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:56
 Analyst: SLR
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.84		mg/kg	0.19	0.023	1
Fluorene	0.25		mg/kg	0.19	0.018	1
Phenanthrene	0.45		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	0.13		mg/kg	0.11	0.019	1
Benzo(a)anthracene	0.058	J	mg/kg	0.11	0.022	1
Chrysene	0.11		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	0.080	J	mg/kg	0.11	0.032	1
Benzo(a)pyrene	0.055	J	mg/kg	0.15	0.047	1
Benzo(ghi)perylene	0.041	J	mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	85		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-08
 Client ID: PB-884-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 17:19
 Analyst: SLR
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	3.2		mg/kg	0.17	0.021	1
Fluorene	0.25		mg/kg	0.17	0.017	1
Phenanthrene	0.70		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.056	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.022	J	mg/kg	0.10	0.019	1
Chrysene	0.092	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	89		30-120
4-Terphenyl-d14	105		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-09
 Client ID: PB-884-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 17:42
 Analyst: SLR
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	95		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-10
 Client ID: PB-884-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:04
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	101		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-11
 Client ID: PB-884-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:27
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 21:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.85		mg/kg	0.17	0.021	1
Fluorene	0.13	J	mg/kg	0.17	0.017	1
Phenanthrene	0.45		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.036	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	0.059	J	mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	92		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-12
 Client ID: PB-884-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 15:48
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	65		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-13
 Client ID: PB-884-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:50
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	86		30-120
4-Terphenyl-d14	98		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-14
 Client ID: PB-884-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:13
 Analyst: SLR
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.050	J	mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	79		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-15
 Client ID: PB-884-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:15
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:35
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.085	J	mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	0.040	J	mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	83		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-16
 Client ID: PB-884-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:58
 Analyst: SLR
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	83		30-120
4-Terphenyl-d14	96		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-17
 Client ID: PB-884-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 16:12
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	85		30-120
4-Terphenyl-d14	100		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-18
 Client ID: PB-884-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 20:21
 Analyst: SLR
 Percent Solids: 94%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	87		30-120
4-Terphenyl-d14	101		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-19
 Client ID: DUP-44
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 00:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 20:44
 Analyst: SLR
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 17:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	2.7		mg/kg	0.17	0.021	1
Fluorene	0.39		mg/kg	0.17	0.017	1
Phenanthrene	0.99		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	0.085	J	mg/kg	0.10	0.017	1
Benzo(a)anthracene	0.027	J	mg/kg	0.10	0.020	1
Chrysene	0.15		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	0.029	J	mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	0.027	J	mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-20
 Client ID: FB-071422-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:05
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 18:09
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	37		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	42		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-21
 Client ID: FB-071422-4
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 13:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 18:24
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	37		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	43		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/20/22 16:29
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 20-21 Batch: WG1663477-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	0.03	J	ug/l	0.10	0.02
Benzo(a)anthracene	0.05	J	ug/l	0.05	0.02
Chrysene	0.04	J	ug/l	0.10	0.01
Benzo(b)fluoranthene	0.07		ug/l	0.05	0.01
Benzo(a)pyrene	0.04	J	ug/l	0.10	0.02
Benzo(ghi)perylene	0.05	J	ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	34		15-120
4-Terphenyl-d14	32	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 07/18/22 13:32
Analyst: SLR

Extraction Method: EPA 3546
Extraction Date: 07/15/22 17:53

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-11,13-16,18-19 Batch: WG1663526-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	88		30-120
4-Terphenyl-d14	103		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/16/22 14:36
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 12,17 Batch: WG1663537-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	95		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 20-21 Batch: WG1663477-2 WG1663477-3								
Naphthalene	69		78		40-140	12		40
Fluorene	70		83		40-140	17		40
Phenanthrene	68		81		40-140	17		40
Anthracene	68		82		40-140	19		40
Pyrene	74		96		26-127	26		40
Benzo(a)anthracene	66		90		40-140	31		40
Chrysene	71		101		40-140	35		40
Benzo(b)fluoranthene	68		90		40-140	28		40
Benzo(a)pyrene	67		90		40-140	29		40
Benzo(ghi)perylene	76		99		40-140	26		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	38		42		23-120
2-Fluorobiphenyl	39		43		15-120
4-Terphenyl-d14	40	Q	46		41-149



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237705

Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-11,13-16,18-19 Batch: WG1663526-2 WG1663526-3								
Naphthalene	74		80		40-140	8		50
Fluorene	83		84		40-140	1		50
Phenanthrene	76		79		40-140	4		50
Anthracene	81		83		40-140	2		50
Pyrene	79		82		35-142	4		50
Benzo(a)anthracene	84		87		40-140	4		50
Chrysene	80		84		40-140	5		50
Benzo(b)fluoranthene	94		96		40-140	2		50
Benzo(a)pyrene	94		100		40-140	6		50
Benzo(ghi)perylene	85		86		40-140	1		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		84		23-120
2-Fluorobiphenyl	83		84		30-120
4-Terphenyl-d14	93		94		18-120

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 12,17 Batch: WG1663537-2 WG1663537-3								
Naphthalene	70		70		40-140	0		50
Fluorene	76		73		40-140	4		50
Phenanthrene	75		73		40-140	3		50
Anthracene	78		75		40-140	4		50
Pyrene	79		75		35-142	5		50
Benzo(a)anthracene	82		80		40-140	2		50
Chrysene	81		79		40-140	3		50
Benzo(b)fluoranthene	87		84		40-140	4		50
Benzo(a)pyrene	91		87		40-140	4		50
Benzo(ghi)perylene	81		78		40-140	4		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		82		23-120
2-Fluorobiphenyl	76		74		30-120
4-Terphenyl-d14	88		82		18-120



METALS



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-01

Date Collected: 07/14/22 08:15

Client ID: PB-826-11-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.61	J	mg/kg	4.12	0.220	2	07/15/22 12:45	07/19/22 00:18	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-02

Date Collected: 07/14/22 08:30

Client ID: PB-826-12-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.00	J	mg/kg	4.04	0.216	2	07/15/22 12:45	07/19/22 00:23	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-03

Date Collected: 07/14/22 08:45

Client ID: PB-826-13-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	4.29		mg/kg	4.12	0.221	2	07/15/22 12:45	07/19/22 22:07	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-04

Date Collected: 07/14/22 09:00

Client ID: PB-826-14-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.32		mg/kg	2.23	0.120	1	07/15/22 12:45	07/18/22 23:46	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-05

Date Collected: 07/14/22 09:15

Client ID: PB-826-15-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	162		mg/kg	2.20	0.118	1	07/15/22 12:45	07/18/22 23:50	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-06

Date Collected: 07/14/22 09:30

Client ID: PB-826-16-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.77		mg/kg	2.22	0.119	1	07/15/22 12:45	07/18/22 23:55	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07

Date Collected: 07/14/22 10:15

Client ID: PB-884-08-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	60.2		mg/kg	4.36	0.234	2	07/15/22 12:45	07/19/22 22:13	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-08
 Client ID: PB-884-09-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.95	J	mg/kg	1.99	0.107	1	07/15/22 12:45	07/19/22 00:04	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-09
 Client ID: PB-884-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.20		mg/kg	2.13	0.114	1	07/15/22 12:45	07/19/22 00:09	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-10
 Client ID: PB-884-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.63		mg/kg	1.99	0.106	1	07/15/22 12:45	07/19/22 00:14	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-11

Date Collected: 07/14/22 11:15

Client ID: PB-884-15-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.68	J	mg/kg	2.02	0.108	1	07/15/22 12:45	07/19/22 00:46	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-12

Date Collected: 07/14/22 11:30

Client ID: PB-884-16-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.86	J	mg/kg	2.00	0.108	1	07/15/22 12:45	07/19/22 00:51	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-13

Date Collected: 07/14/22 11:45

Client ID: PB-884-17-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.99	J	mg/kg	2.01	0.108	1	07/15/22 12:45	07/19/22 00:56	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-14

Date Collected: 07/14/22 12:00

Client ID: PB-884-18-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.17		mg/kg	4.64	0.248	2	07/15/22 12:45	07/19/22 22:18	EPA 3050B	1,6010D	BV



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-15

Date Collected: 07/14/22 12:15

Client ID: PB-884-19-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.61	J	mg/kg	2.08	0.112	1	07/15/22 20:44	07/20/22 07:04	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-16

Date Collected: 07/14/22 12:30

Client ID: PB-884-20-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.04	J	mg/kg	2.06	0.110	1	07/15/22 20:44	07/20/22 10:01	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-17

Date Collected: 07/14/22 12:45

Client ID: PB-884-21-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.98	J	mg/kg	2.05	0.110	1	07/15/22 20:44	07/20/22 10:05	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-18

Date Collected: 07/14/22 13:00

Client ID: PB-884-23-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 94%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.61	J	mg/kg	2.08	0.112	1	07/15/22 20:44	07/20/22 10:10	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-19

Date Collected: 07/14/22 00:00

Client ID: DUP-44

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.70	J	mg/kg	2.11	0.113	1	07/15/22 20:44	07/20/22 10:15	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-20

Date Collected: 07/14/22 13:05

Client ID: FB-071422-3

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 20:19	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-21

Date Collected: 07/14/22 13:10

Client ID: FB-071422-4

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 21:07	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-14 Batch: WG1663337-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/15/22 12:45	07/18/22 20:58	1,6010D	BV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 15-19 Batch: WG1663364-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/15/22 20:44	07/20/22 06:41	1,6010D	SB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 20-21 Batch: WG1663390-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 18:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 Batch: WG1663337-2 SRM Lot Number: D113-540								
Lead, Total	89		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 15-19 Batch: WG1663364-2 SRM Lot Number: D113-540								
Lead, Total	93		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 20-21 Batch: WG1663390-2								
Lead, Total	102		-		80-120	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1663337-3 QC Sample: L2237664-01 Client ID: MS Sample												
Lead, Total	158	43	113	0	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 15-19 QC Batch ID: WG1663364-3 QC Sample: L2237705-15 Client ID: PB-884-19-SS01												
Lead, Total	1.61J	44.2	25.7	58	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 20-21 QC Batch ID: WG1663390-3 WG1663390-4 QC Sample: L2237672-03 Client ID: MS Sample												
Lead, Total	0.9553J	530	569.8	108		561.0	106		75-125	2		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237705

Report Date: 07/21/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1663337-4 QC Sample: L2237664-01 Client ID: DUP Sample						
Lead, Total	158	81.4	mg/kg	64	Q	20
Total Metals - Mansfield Lab Associated sample(s): 15-19 QC Batch ID: WG1663364-4 QC Sample: L2237705-15 Client ID: PB-884-19-SS01						
Lead, Total	1.61J	1.98J	mg/kg	NC		20

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

**Lab Serial Dilution
Analysis
Batch Quality Control**

Lab Number: L2237705

Report Date: 07/21/22

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-14 QC Batch ID: WG1663337-6 QC Sample: L2237664-01 Client ID: DUP Sample						
Lead, Total	158	207	mg/kg	31	Q	20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-01

Date Collected: 07/14/22 08:15

Client ID: PB-826-11-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.6		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-02

Date Collected: 07/14/22 08:30

Client ID: PB-826-12-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.5		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-03
 Client ID: PB-826-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 08:45
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-04

Date Collected: 07/14/22 09:00

Client ID: PB-826-14-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-05

Date Collected: 07/14/22 09:15

Client ID: PB-826-15-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.9		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-06

Date Collected: 07/14/22 09:30

Client ID: PB-826-16-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-07
Client ID: PB-884-08-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:15
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-08

Date Collected: 07/14/22 10:30

Client ID: PB-884-09-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-09
Client ID: PB-884-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:45
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.6		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-10

Date Collected: 07/14/22 11:00

Client ID: PB-884-14-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-11

Date Collected: 07/14/22 11:15

Client ID: PB-884-15-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.0		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-12

Date Collected: 07/14/22 11:30

Client ID: PB-884-16-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-13
Client ID: PB-884-17-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:45
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.6		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-14

Date Collected: 07/14/22 12:00

Client ID: PB-884-18-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.2		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-15

Date Collected: 07/14/22 12:15

Client ID: PB-884-19-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-16
 Client ID: PB-884-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.5		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-17

Date Collected: 07/14/22 12:45

Client ID: PB-884-21-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.1		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**SAMPLE RESULTS**

Lab ID: L2237705-18

Date Collected: 07/14/22 13:00

Client ID: PB-884-23-SS01

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.4		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2237705

Project Number: 200.00135.006

Report Date: 07/21/22

SAMPLE RESULTS

Lab ID: L2237705-19

Date Collected: 07/14/22 00:00

Client ID: DUP-44

Date Received: 07/14/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.7		%	0.100	NA	1	-	07/15/22 13:06	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237705

Report Date: 07/21/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-19 QC Batch ID: WG1663375-1 QC Sample: L2237705-01 Client ID: PB-826-11-SS01						
Solids, Total	92.6	93.4	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent
E	Absent
F	Absent
G	Absent
H	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-01A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-01B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-01C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-01D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-01E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-01F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-02A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-02B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-02C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-02D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-02E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-02F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-03A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-03B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-03C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-03D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-03E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-03F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-04A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-04B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-04C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-04D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-04E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-04F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-05A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-05B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-05C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-05D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-05F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-06A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-06B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-06C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-06D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-06F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-07A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2237705-07B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260H(14),PA-8260HLW(14)
L2237705-07C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260H(14),PA-8260HLW(14)
L2237705-07D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-07F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-08A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-08B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-08C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-08D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-08F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-09A	Vial MeOH preserved	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237705-09B	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-09C	Vial water preserved	A	NA		4.0	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-09D	Plastic 120ml unpreserved	A	NA		4.0	Y	Absent		TS(7)
L2237705-09E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.0	Y	Absent		PB-TI(180)
L2237705-09F	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		PA-PAH(14)
L2237705-10A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-10B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-10C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-10D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-10E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-10F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-11A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-11B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-11C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-11D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-11E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-11F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-12A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-12B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-12C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-12D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-12E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-12F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-13A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-13B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-13C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-13D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-13E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-13F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-14A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-14B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-14C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-14D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-14E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-14F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-15A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-15B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-15C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-15D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-15E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-15F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-16A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-16B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-16C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-16D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-16E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-16F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-17A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-17B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-17C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237705**Project Number:** 200.00135.006**Report Date:** 07/21/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-17D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-17E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-17F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-18A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-18B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-18C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-18D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-18E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-18F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-19A	Vial MeOH preserved	E	NA		3.7	Y	Absent		PA-8260HLW(14)
L2237705-19B	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-19C	Vial water preserved	E	NA		3.7	Y	Absent	15-JUL-22 09:06	PA-8260HLW(14)
L2237705-19D	Plastic 120ml unpreserved	E	NA		3.7	Y	Absent		TS(7)
L2237705-19E	Metals Only-Glass 60mL/2oz unpreserved	E	NA		3.7	Y	Absent		PB-TI(180)
L2237705-19F	Glass 120ml/4oz unpreserved	E	NA		3.7	Y	Absent		PA-PAH(14)
L2237705-20A	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-20B	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-20C	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-20D	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)
L2237705-20E	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)
L2237705-20F	Plastic 250ml HNO3 preserved	E	<2	<2	3.7	Y	Absent		PB-6020T-PPB(180)
L2237705-20G	Amber 250ml unpreserved	E	7	7	3.7	Y	Absent		PA-PAHSIM-LVI(7)
L2237705-20H	Amber 250ml unpreserved	E	7	7	3.7	Y	Absent		PA-PAHSIM-LVI(7)
L2237705-21A	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-21B	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-21C	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-21D	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)
L2237705-21E	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Serial_No:07212214:26
Lab Number: L2237705
Report Date: 07/21/22

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237705-21F	Plastic 250ml HNO3 preserved	E	<2	<2	3.7	Y	Absent		PB-6020T-PPB(180)
L2237705-21G	Amber 250ml unpreserved	E	7	7	3.7	Y	Absent		PA-PAHSIM-LVI(7)
L2237705-21H	Amber 250ml unpreserved	E	7	7	3.7	Y	Absent		PA-PAHSIM-LVI(7)
L2237705-22A	Vial HCl preserved	E	NA		3.7	Y	Absent		PA-8260(14)
L2237705-22B	Vial HCl preserved	E	NA		3.7	Y	Absent		8011(14)

Container Comments

L2237705-19B HEADSPACE



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237705
Report Date: 07/21/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpineol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

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Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3286

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terraphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/15/22

ALPHA Job #: L2237705

Report Information Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client Info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	Shortlist 1-5	VOC Portion of SL 1-5	EDB (8011)											
31705-21	FB-071422-4	7/14	13:10	W	TS	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22	TB-071422		-	W	TS	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Lab to do
 Preservation
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
31705-21	FB-071422-4	7/14	13:10	W	TS
22	TB-071422		-	W	TS

Container Type - - G - - - - -
 Preservative - - - - -

Relinquished By: [Signature] Date/Time: 7/14/22 1:50
 Received By: [Signature] Date/Time: 7/14/22 2:50
 Received By: [Signature] Date/Time: 7/14/22 2:50

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

PADEP Short List Analytical Suites per Table III-5:

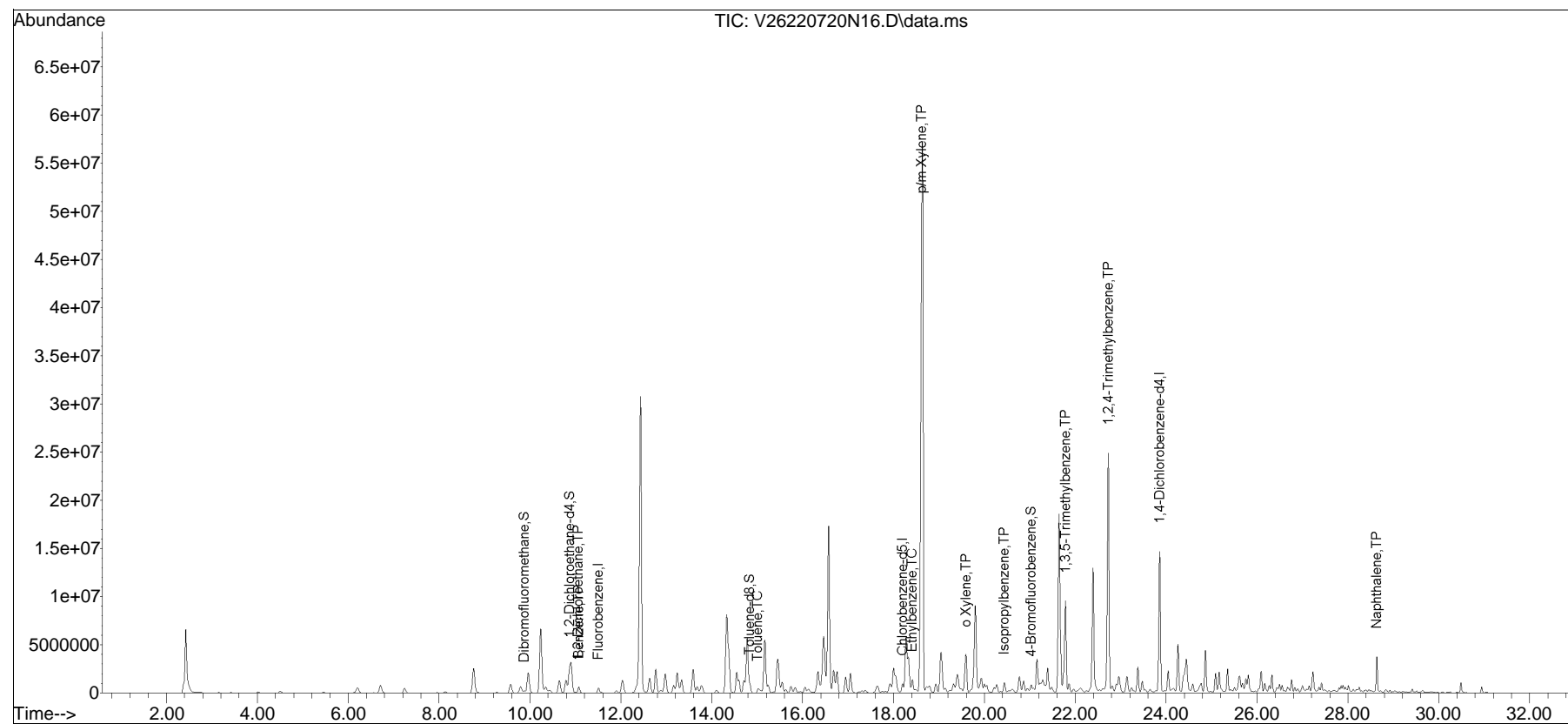
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA126\2022\220720N\
 Data File : V26220720N16.D
 Acq On : 21 Jul 2022 06:20 am
 Operator : VOA126:JC
 Sample : 12237705-07,31,7.23,5,,c,r2f
 Misc : WG1665590,ICAL19172
 ALS Vial : 16 Sample Multiplier: 1

Quant Time: Jul 21 07:18:20 2022
 Quant Method : I:\VOLATILES\VOA126\2022\220720N\V126_220713P_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Jul 14 06:55:13 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list20N\V26220720N01.D•

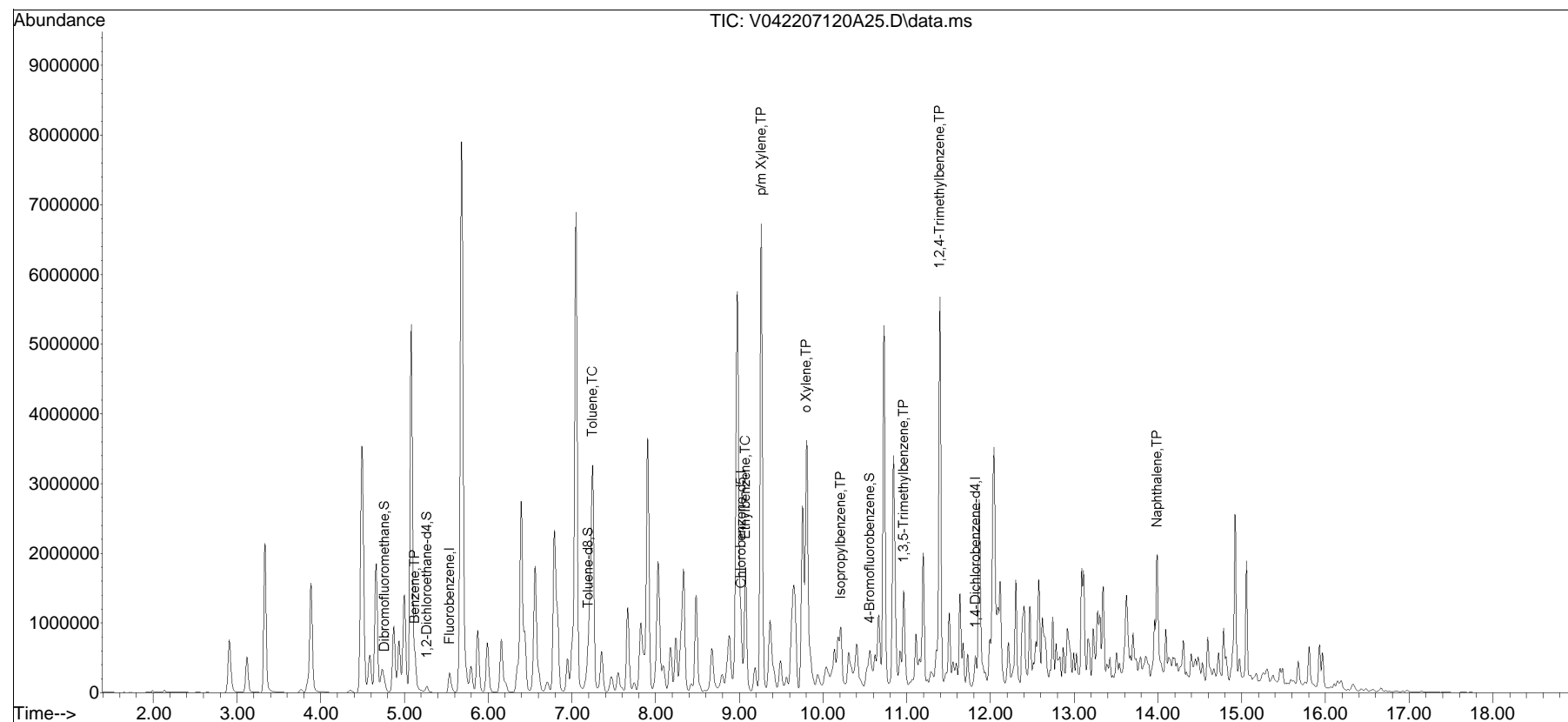


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\2207120A\
Data File : V042207120A25.D
Acq On : 20 Jul 2022 5:38 pm
Operator : VOA104:JC
Sample : L2237705-08,31H,3.97,5,0.100,,A,R2F
Misc : WG1665578,ICAL19119
ALS Vial : 25 Sample Multiplier: 1

Quant Time: Jul 21 06:57:12 2022
Quant Method : I:\VOLATILES\VOA104\2022\2207120A\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list120A\V042207120A01.D•

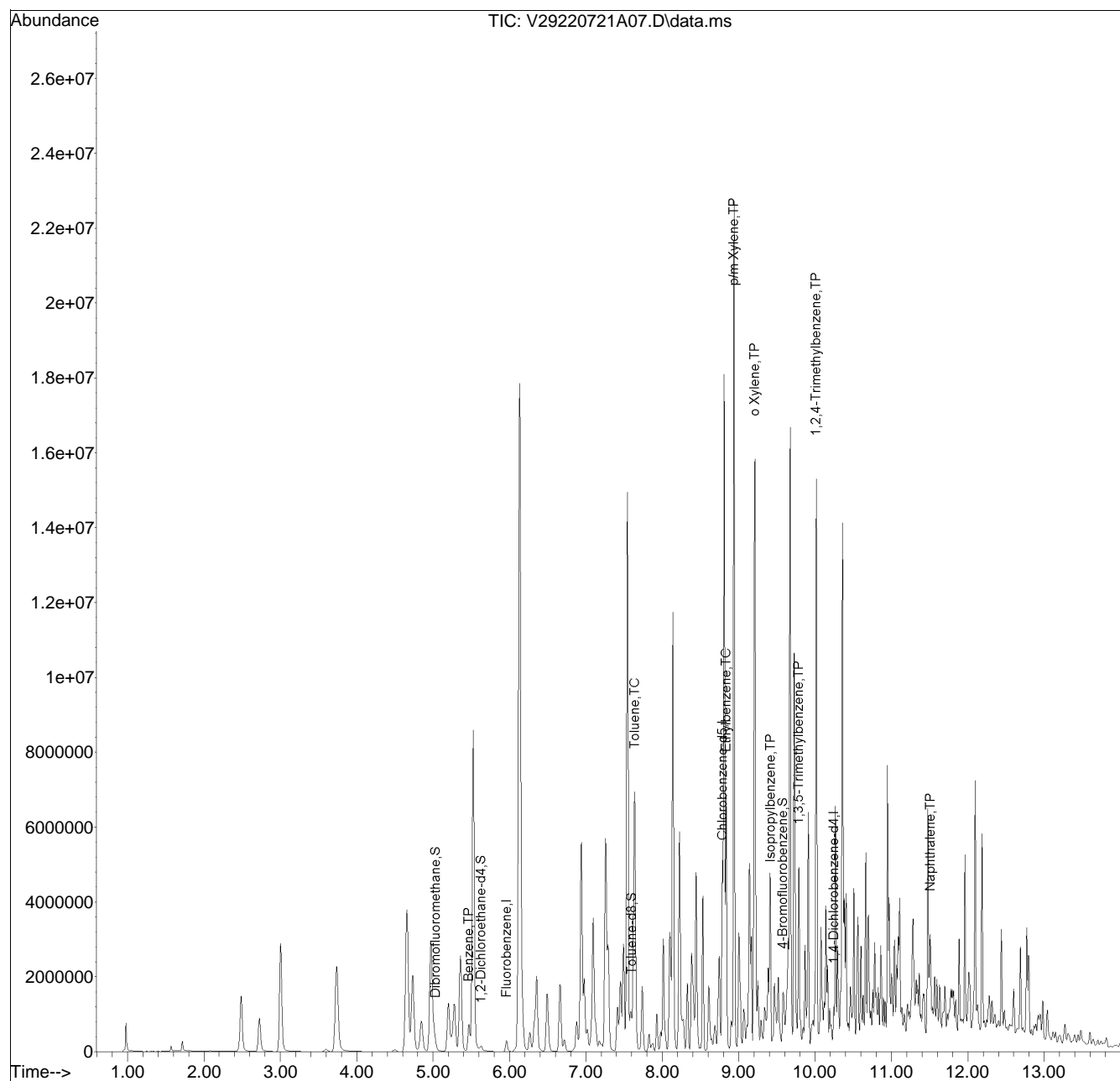


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA129\2022\220721A\
 Data File : V29220721A07.D
 Acq On : 21 Jul 2022 09:34 am
 Operator : VOA129:MKS
 Sample : L2237705-11,31H,4.67,5,0.100,,A,R2F
 Misc : WG1665734,ICAL19173
 ALS Vial : 7 Sample Multiplier: 1

Quant Time: Jul 21 11:01:20 2022
 Quant Method : I:\VOLATILES\VOA129\2022\220721A\V129_220712N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Thu Jul 14 08:00:36 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list21A\V29220721A01.D•

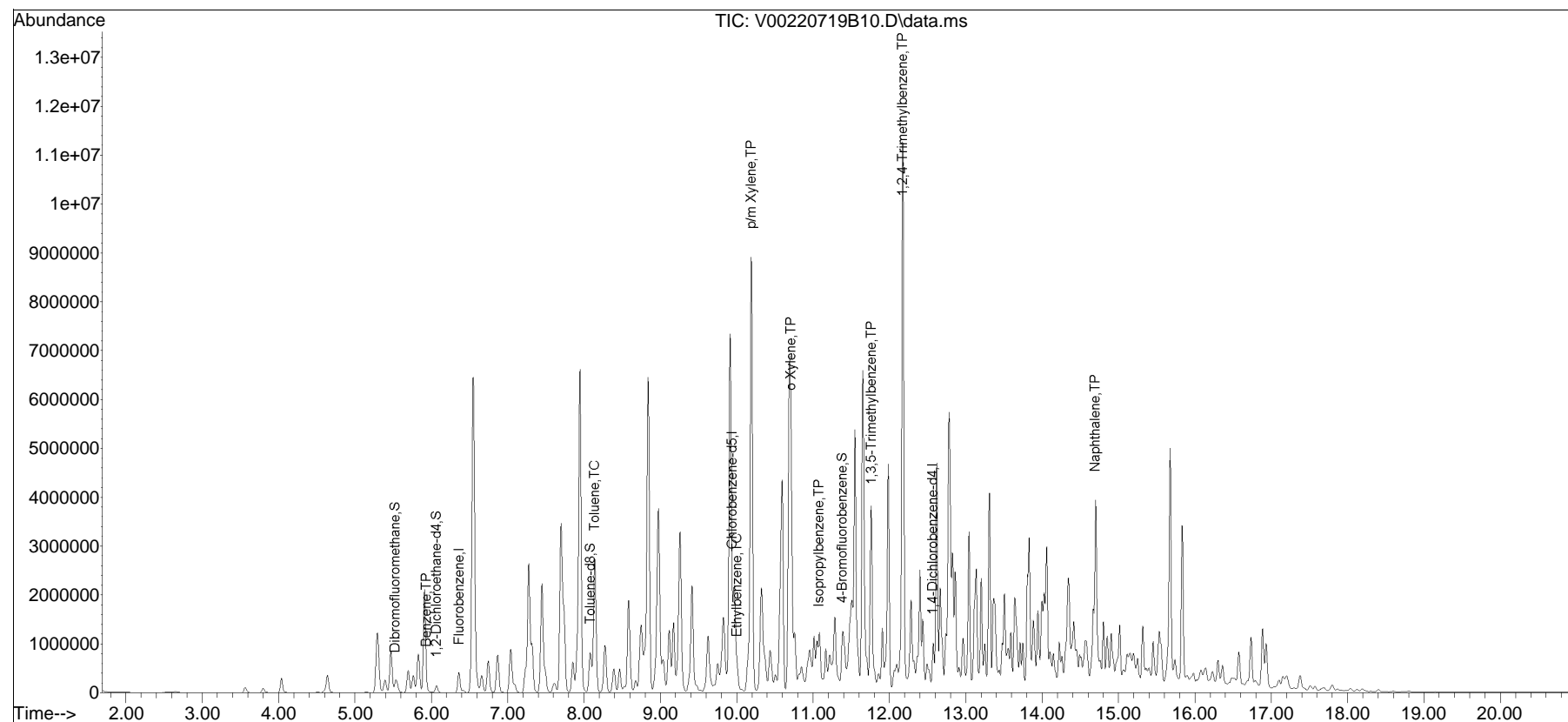


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA100\2022\220719B\
Data File : V00220719B10.D
Acq On : 19 Jul 2022 5:58 pm
Operator : VOA100:JC
Sample : 12237705-19,31h,4.02,5,0.100,,a,r2f
Misc : WG1665199,ICAL19178
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Jul 20 06:13:57 2022
Quant Method : I:\VOLATILES\VOA100\2022\220719B\V100_220714N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Fri Jul 15 08:34:11 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19B\V00220719B01.D•





ANALYTICAL REPORT

Lab Number:	L2237706
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/22/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2237706-01	PB-883-01-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:00	07/14/22
L2237706-02	PB-883-02-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:10	07/14/22
L2237706-03	PB-883-03-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:20	07/14/22
L2237706-04	PB-883-04-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:30	07/14/22
L2237706-05	PB-883-05-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:40	07/14/22
L2237706-06	PB-883-06-SS01	SOIL	PHILADELPHIA, PA	07/14/22 09:50	07/14/22
L2237706-07	PB-883-07-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:00	07/14/22
L2237706-08	PB-883-15-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:10	07/14/22
L2237706-09	PB-883-20-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:20	07/14/22
L2237706-10	PB-883-21-SS01	SOIL	PHILADELPHIA, PA	07/14/22 10:30	07/14/22
L2237706-11	PB-885-04-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:00	07/14/22
L2237706-12	PB-885-05-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:10	07/14/22
L2237706-13	PB-885-12-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:20	07/14/22
L2237706-14	PB-885-13-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:30	07/14/22
L2237706-15	PB-885-14-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:40	07/14/22
L2237706-16	PB-885-15-SS01	SOIL	PHILADELPHIA, PA	07/14/22 11:50	07/14/22
L2237706-17	PB-885-20-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:00	07/14/22
L2237706-18	PB-885-25-SS01	SOIL	PHILADELPHIA, PA	07/14/22 12:10	07/14/22
L2237706-19	FB-071422-1	WATER	PHILADELPHIA, PA	07/14/22 14:00	07/14/22
L2237706-20	FB-071422-2	WATER	PHILADELPHIA, PA	07/14/22 14:10	07/14/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Semivolatile Organics by SIM

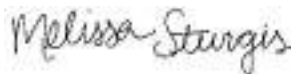
The WG1663477-1 Method Blank, associated with L2237706-19 and -20, has a concentration above the reporting limit for Benzo(b)fluoranthene. Since the associated sample concentrations are either greater than 10x the blank concentration or non-detect to the RL for this target analyte, no corrective action is required. Any results detected below the reporting limit are qualified with a "B".

Total Metals

L2237706-01: The sample has an elevated detection limit due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 07/22/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-01
 Client ID: PB-883-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 22:09
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00032	J	mg/kg	0.0021	0.00021	1
Benzene	0.00026	J	mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00018	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-02
 Client ID: PB-883-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:05
 Analyst: JC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0018	J	mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00051	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00056	1
1,2-Dibromoethane	ND		mg/kg	0.00051	0.00030	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-03
 Client ID: PB-883-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 23:03
 Analyst: JC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0020		mg/kg	0.0016	0.00016	1
Benzene	0.00041		mg/kg	0.00041	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00082	0.00021	1
Toluene	ND		mg/kg	0.00082	0.00045	1
1,2-Dibromoethane	ND		mg/kg	0.00041	0.00024	1
Ethylbenzene	ND		mg/kg	0.00082	0.00012	1
p/m-Xylene	ND		mg/kg	0.0016	0.00046	1
o-Xylene	ND		mg/kg	0.00082	0.00024	1
Xylenes, Total	ND		mg/kg	0.00082	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00082	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-04
 Client ID: PB-883-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 23:30
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00098	0.00025	1
Toluene	ND		mg/kg	0.00098	0.00053	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00098	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00098	0.00028	1
Xylenes, Total	ND		mg/kg	0.00098	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00098	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-05
 Client ID: PB-883-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/18/22 23:57
 Analyst: JC
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0042		mg/kg	0.0018	0.00018	1
Benzene	0.00030	J	mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	0.00020	J	mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	0.00084	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.00034	J	mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	76		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-06
 Client ID: PB-883-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 00:23
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00048	J	mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00053	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00053	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00031	1
Xylenes, Total	ND		mg/kg	0.0010	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	125		70-130
Dibromofluoromethane	106		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-07
 Client ID: PB-883-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 00:49
 Analyst: JC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0016	J	mg/kg	0.0023	0.00023	1
Benzene	0.00026	J	mg/kg	0.00056	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00029	1
Toluene	ND		mg/kg	0.0011	0.00061	1
1,2-Dibromoethane	ND		mg/kg	0.00056	0.00033	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00063	1
o-Xylene	ND		mg/kg	0.0011	0.00033	1
Xylenes, Total	ND		mg/kg	0.0011	0.00033	1
Isopropylbenzene	0.00021	J	mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.00025	J	mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	0.00041	J	mg/kg	0.0023	0.00038	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-08
 Client ID: PB-883-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 01:15
 Analyst: JC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0018	J	mg/kg	0.0019	0.00019	1
Benzene	0.00025	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	0.00030	J	mg/kg	0.00095	0.00028	1
Xylenes, Total	0.00030	J	mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-09
 Client ID: PB-883-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 01:42
 Analyst: JC
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.0051		mg/kg	0.0019	0.00019	1
Benzene	0.00045	J	mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00025	1
Toluene	ND		mg/kg	0.00097	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
p/m-Xylene	ND		mg/kg	0.0019	0.00054	1
o-Xylene	ND		mg/kg	0.00097	0.00028	1
Xylenes, Total	ND		mg/kg	0.00097	0.00028	1
Isopropylbenzene	0.00029	J	mg/kg	0.00097	0.00010	1
1,3,5-Trimethylbenzene	0.00048	J	mg/kg	0.0019	0.00019	1
1,2,4-Trimethylbenzene	0.00089	J	mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	81		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-10
 Client ID: PB-883-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 02:09
 Analyst: JC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00024	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	0.00034	J	mg/kg	0.00091	0.00013	1
p/m-Xylene	0.0010	J	mg/kg	0.0018	0.00051	1
o-Xylene	0.0013		mg/kg	0.00091	0.00027	1
Xylenes, Total	0.0023	J	mg/kg	0.00091	0.00027	1
Isopropylbenzene	0.00042	J	mg/kg	0.00091	0.00010	1
1,3,5-Trimethylbenzene	0.0032		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	0.0097		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	105		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-11
 Client ID: PB-885-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 02:35
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00091	0.00023	1
Toluene	ND		mg/kg	0.00091	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00091	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00091	0.00026	1
Xylenes, Total	ND		mg/kg	0.00091	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00091	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-12
 Client ID: PB-885-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 03:02
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00047	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00051	1
1,2-Dibromoethane	ND		mg/kg	0.00047	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	106		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-13
 Client ID: PB-885-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 03:29
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-14
 Client ID: PB-885-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 03:56
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	ND		mg/kg	0.00048	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00095	0.00024	1
Toluene	ND		mg/kg	0.00095	0.00052	1
1,2-Dibromoethane	ND		mg/kg	0.00048	0.00028	1
Ethylbenzene	ND		mg/kg	0.00095	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00053	1
o-Xylene	ND		mg/kg	0.00095	0.00028	1
Xylenes, Total	ND		mg/kg	0.00095	0.00028	1
Isopropylbenzene	ND		mg/kg	0.00095	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00032	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	75		70-130
Dibromofluoromethane	107		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-15
 Client ID: PB-885-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:31
 Analyst: JC
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00084	0.00022	1
Toluene	ND		mg/kg	0.00084	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	ND		mg/kg	0.00084	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00047	1
o-Xylene	ND		mg/kg	0.00084	0.00024	1
Xylenes, Total	ND		mg/kg	0.00084	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00084	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	101		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-16
 Client ID: PB-885-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 04:49
 Analyst: JC
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00051	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	71		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-17
 Client ID: PB-885-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 05:16
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00049	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.00099	0.00025	1
Toluene	ND		mg/kg	0.00099	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00049	0.00029	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	ND		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	121		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-18
 Client ID: PB-885-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 05:43
 Analyst: JC
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00042	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00085	0.00022	1
Toluene	ND		mg/kg	0.00085	0.00046	1
1,2-Dibromoethane	ND		mg/kg	0.00042	0.00025	1
Ethylbenzene	ND		mg/kg	0.00085	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00048	1
o-Xylene	ND		mg/kg	0.00085	0.00025	1
Xylenes, Total	ND		mg/kg	0.00085	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00085	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00028	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	77		70-130
Dibromofluoromethane	108		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-19
 Client ID: FB-071422-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:23
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-19
 Client ID: FB-071422-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 15:21
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	136	Q	70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-20
 Client ID: FB-071422-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/15/22 18:30
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-20
 Client ID: FB-071422-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/17/22 15:43
 Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	129		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	120		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/15/22 16:10
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/15/22 15:04

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 19-20 Batch: WG1663450-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/17/22 13:55
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 19-20 Batch: WG1664113-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	127		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	117		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/18/22 21:42
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-14,16-18 Batch: WG1664672-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	104		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/19/22 16:38
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 02,15 Batch: WG1665197-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	99		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237706

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 19-20 Batch: WG1663450-2									
1,2-Dibromoethane	97		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237706

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 19-20 Batch: WG1664113-3 WG1664113-4								
Methyl tert butyl ether	90		86		63-130	5		20
Benzene	86		82		70-130	5		20
1,2-Dichloroethane	100		96		70-130	4		20
Toluene	83		84		70-130	1		20
Ethylbenzene	90		91		70-130	1		20
p/m-Xylene	90		90		70-130	0		20
o-Xylene	90		90		70-130	0		20
Isopropylbenzene	86		87		70-130	1		20
1,3,5-Trimethylbenzene	90		92		64-130	2		20
1,2,4-Trimethylbenzene	89		88		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	117		116		70-130
Toluene-d8	98		97		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	109		111		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-14,16-18 Batch: WG1664672-3 WG1664672-4								
Methyl tert butyl ether	90		90		66-130	0		30
Benzene	90		90		70-130	0		30
1,2-Dichloroethane	90		90		70-130	0		30
Toluene	90		92		70-130	2		30
1,2-Dibromoethane	96		98		70-130	2		30
Ethylbenzene	89		90		70-130	1		30
p/m-Xylene	94		96		70-130	2		30
o-Xylene	93		94		70-130	1		30
Isopropylbenzene	72		87		70-130	19		30
1,3,5-Trimethylbenzene	85		87		70-130	2		30
1,2,4-Trimethylbenzene	83		86		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	102		100		70-130
Toluene-d8	98		102		70-130
4-Bromofluorobenzene	83		84		70-130
Dibromofluoromethane	106		105		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 02,15 Batch: WG1665197-3 WG1665197-4								
Methyl tert butyl ether	81		84		66-130	4		30
Benzene	77		80		70-130	4		30
1,2-Dichloroethane	75		78		70-130	4		30
Toluene	71		73		70-130	3		30
1,2-Dibromoethane	79		82		70-130	4		30
Ethylbenzene	72		76		70-130	5		30
p/m-Xylene	73		76		70-130	4		30
o-Xylene	77		80		70-130	4		30
Isopropylbenzene	74		75		70-130	1		30
1,3,5-Trimethylbenzene	74		77		70-130	4		30
1,2,4-Trimethylbenzene	74		77		70-130	4		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	102		101		70-130

SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-01
 Client ID: PB-883-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 16:36
 Analyst: EK
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-02
 Client ID: PB-883-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 17:01
 Analyst: EK
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.023	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	96		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-03
 Client ID: PB-883-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 17:25
 Analyst: EK
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	74		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-04
 Client ID: PB-883-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/21/22 17:18
 Analyst: JG
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/21/22 10:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	80		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-05
 Client ID: PB-883-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 18:13
 Analyst: EK
 Percent Solids: 85%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	82		30-120
4-Terphenyl-d14	91		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-06
 Client ID: PB-883-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 18:37
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	95		30-120
4-Terphenyl-d14	96		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-07
 Client ID: PB-883-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 19:01
 Analyst: EK
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	73		30-120
4-Terphenyl-d14	86		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-08
 Client ID: PB-883-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 19:25
 Analyst: EK
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.033	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.048	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	83		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-09
 Client ID: PB-883-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 19:49
 Analyst: EK
 Percent Solids: 83%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1
Fluorene	ND		mg/kg	0.20	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.024	1
Anthracene	ND		mg/kg	0.12	0.039	1
Pyrene	ND		mg/kg	0.12	0.020	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.049	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	69		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-10
 Client ID: PB-883-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 20:13
 Analyst: EK
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	3.0		mg/kg	0.18	0.022	1
Fluorene	1.2		mg/kg	0.18	0.018	1
Phenanthrene	3.7		mg/kg	0.11	0.022	1
Anthracene	0.74		mg/kg	0.11	0.036	1
Pyrene	0.23		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	81		30-120
4-Terphenyl-d14	94		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-11
 Client ID: PB-885-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 20:37
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-12
 Client ID: PB-885-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 21:01
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-13
 Client ID: PB-885-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 21:25
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.020	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.028	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.041	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	79		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-14
 Client ID: PB-885-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 21:49
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	67		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-15
 Client ID: PB-885-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 22:13
 Analyst: EK
 Percent Solids: 97%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	75		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-16
 Client ID: PB-885-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 22:37
 Analyst: EK
 Percent Solids: 95%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-17
 Client ID: PB-885-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 23:01
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.016	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.033	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	92		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-18
 Client ID: PB-885-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/16/22 23:25
 Analyst: EK
 Percent Solids: 96%

Extraction Method: EPA 3546
 Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.17	0.021	1
Fluorene	ND		mg/kg	0.17	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.019	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.029	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.042	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.020	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	80		30-120
4-Terphenyl-d14	90		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-19
 Client ID: FB-071422-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 18:40
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	41		23-120
2-Fluorobiphenyl	44		15-120
4-Terphenyl-d14	46		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-20
 Client ID: FB-071422-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 18:56
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	44		23-120
2-Fluorobiphenyl	46		15-120
4-Terphenyl-d14	47		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/20/22 16:29
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/15/22 15:29

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 19-20 Batch: WG1663477-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	0.03	J	ug/l	0.10	0.02
Benzo(a)anthracene	0.05	J	ug/l	0.05	0.02
Chrysene	0.04	J	ug/l	0.10	0.01
Benzo(b)fluoranthene	0.07		ug/l	0.05	0.01
Benzo(a)pyrene	0.04	J	ug/l	0.10	0.02
Benzo(ghi)perylene	0.05	J	ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	33		23-120
2-Fluorobiphenyl	34		15-120
4-Terphenyl-d14	32	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/16/22 14:36
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 07/15/22 19:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03,05-18 Batch: WG1663537-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.027
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	95		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/21/22 09:47
Analyst: JG

Extraction Method: EPA 3546
Extraction Date: 07/20/22 17:31

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04 Batch: WG1665398-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.018
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		25-120
Phenol-d6	42		10-120
Nitrobenzene-d5	43		23-120
2-Fluorobiphenyl	42		30-120
2,4,6-Tribromophenol	43		10-136
4-Terphenyl-d14	43		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 19-20 Batch: WG1663477-2 WG1663477-3								
Naphthalene	69		78		40-140	12		40
Fluorene	70		83		40-140	17		40
Phenanthrene	68		81		40-140	17		40
Anthracene	68		82		40-140	19		40
Pyrene	74		96		26-127	26		40
Benzo(a)anthracene	66		90		40-140	31		40
Chrysene	71		101		40-140	35		40
Benzo(b)fluoranthene	68		90		40-140	28		40
Benzo(a)pyrene	67		90		40-140	29		40
Benzo(ghi)perylene	76		99		40-140	26		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	38		42		23-120
2-Fluorobiphenyl	39		43		15-120
4-Terphenyl-d14	40	Q	46		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03,05-18 Batch: WG1663537-2 WG1663537-3								
Naphthalene	70		70		40-140	0		50
Fluorene	76		73		40-140	4		50
Phenanthrene	75		73		40-140	3		50
Anthracene	78		75		40-140	4		50
Pyrene	79		75		35-142	5		50
Benzo(a)anthracene	82		80		40-140	2		50
Chrysene	81		79		40-140	3		50
Benzo(b)fluoranthene	87		84		40-140	4		50
Benzo(a)pyrene	91		87		40-140	4		50
Benzo(ghi)perylene	81		78		40-140	4		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	78		82		23-120
2-Fluorobiphenyl	76		74		30-120
4-Terphenyl-d14	88		82		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04 Batch: WG1665398-2 WG1665398-3								
Naphthalene	65		72		40-140	10		50
Fluorene	78		80		40-140	3		50
Phenanthrene	78		78		40-140	0		50
Anthracene	79		80		40-140	1		50
Pyrene	75		76		35-142	1		50
Benzo(a)anthracene	81		79		40-140	3		50
Chrysene	83		82		40-140	1		50
Benzo(b)fluoranthene	76		75		40-140	1		50
Benzo(a)pyrene	83		80		40-140	4		50
Benzo(ghi)perylene	72		74		40-140	3		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	32		36		25-120
Phenol-d6	35		39		10-120
Nitrobenzene-d5	35		38		23-120
2-Fluorobiphenyl	38		38		30-120
2,4,6-Tribromophenol	38		40		10-136
4-Terphenyl-d14	39		39		18-120

METALS



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-01
 Client ID: PB-883-01-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.61	J	mg/kg	11.4	0.610	5	07/15/22 16:15	07/20/22 11:35	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-02
 Client ID: PB-883-02-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.88		mg/kg	2.35	0.126	1	07/15/22 16:15	07/19/22 21:45	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-03
 Client ID: PB-883-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.82		mg/kg	4.41	0.236	2	07/15/22 16:15	07/20/22 11:24	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-04
 Client ID: PB-883-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.16		mg/kg	4.50	0.241	2	07/15/22 16:15	07/20/22 12:10	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-05
 Client ID: PB-883-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 85%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.72		mg/kg	2.24	0.120	1	07/15/22 16:15	07/19/22 22:31	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-06
 Client ID: PB-883-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.14		mg/kg	2.28	0.122	1	07/15/22 16:15	07/19/22 22:36	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-07
 Client ID: PB-883-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	13.9		mg/kg	2.29	0.123	1	07/15/22 16:15	07/19/22 22:41	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-08
 Client ID: PB-883-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	8.06		mg/kg	2.27	0.122	1	07/15/22 16:15	07/19/22 22:45	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-09
 Client ID: PB-883-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 83%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.73		mg/kg	2.28	0.122	1	07/15/22 16:15	07/19/22 22:50	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-10
 Client ID: PB-883-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	12.6		mg/kg	10.6	0.567	5	07/15/22 16:15	07/20/22 12:15	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-11
 Client ID: PB-885-04-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.56	J	mg/kg	2.00	0.107	1	07/15/22 16:15	07/19/22 22:59	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-12
 Client ID: PB-885-05-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.39	J	mg/kg	1.97	0.106	1	07/15/22 16:15	07/19/22 23:04	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-13
 Client ID: PB-885-12-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:20
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.33	J	mg/kg	1.97	0.106	1	07/15/22 16:15	07/19/22 23:08	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-14
 Client ID: PB-885-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.72	J	mg/kg	1.99	0.107	1	07/15/22 16:15	07/19/22 23:13	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-15
 Client ID: PB-885-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:40
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 97%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.45	J	mg/kg	1.95	0.105	1	07/15/22 16:15	07/19/22 23:36	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-16
 Client ID: PB-885-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:50
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 95%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.48	J	mg/kg	1.98	0.106	1	07/15/22 16:15	07/19/22 23:40	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-17
 Client ID: PB-885-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.63	J	mg/kg	1.97	0.105	1	07/15/22 16:15	07/19/22 23:45	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-18
 Client ID: PB-885-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 96%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.50	J	mg/kg	1.97	0.106	1	07/15/22 16:15	07/20/22 00:26	EPA 3050B	1,6010D	DL



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-19
 Client ID: FB-071422-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:00
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 21:12	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-20
 Client ID: FB-071422-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 14:10
 Date Received: 07/14/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 21:18	EPA 3005A	1,6020B	WP



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-18 Batch: WG1663362-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/15/22 16:15	07/19/22 21:36	1,6010D	DL

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 19-20 Batch: WG1663390-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/15/22 14:25	07/18/22 18:50	1,6020B	WP

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237706

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-18 Batch: WG1663362-2 SRM Lot Number: D113-540								
Lead, Total	86		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 19-20 Batch: WG1663390-2								
Lead, Total	102		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1663362-3 QC Sample: L2237706-01 Client ID: PB-883-01-SS01												
Lead, Total	7.61J	48	48.2	100		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 19-20 QC Batch ID: WG1663390-3 WG1663390-4 QC Sample: L2237672-03 Client ID: MS Sample												
Lead, Total	0.9553J	530	569.8	108		561.0	106		75-125	2		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2237706

Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-18 QC Batch ID: WG1663362-4 QC Sample: L2237706-01 Client ID: PB-883-01-SS01						
Lead, Total	7.61J	8.10J	mg/kg	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-01
Client ID: PB-883-01-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:00
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.2		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-02
Client ID: PB-883-02-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:10
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.7		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-03
Client ID: PB-883-03-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:20
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.7		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-04
Client ID: PB-883-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:30
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.5		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-05
Client ID: PB-883-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:40
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.7		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-06
Client ID: PB-883-06-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 09:50
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.5		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-07
Client ID: PB-883-07-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:00
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.1		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-08
Client ID: PB-883-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:10
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-09
Client ID: PB-883-20-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:20
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-10
Client ID: PB-883-21-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 10:30
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-11
Client ID: PB-885-04-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:00
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.5		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-12
Client ID: PB-885-05-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:10
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.8		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-13
Client ID: PB-885-12-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:20
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.0		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-14
Client ID: PB-885-13-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:30
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	95.6		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-15
Client ID: PB-885-14-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:40
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.5		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-16
Client ID: PB-885-15-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 11:50
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	94.8		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-17
Client ID: PB-885-20-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:00
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.3		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2237706-18
Client ID: PB-885-25-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/14/22 12:10
Date Received: 07/14/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	96.4		%	0.100	NA	1	-	07/15/22 12:56	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18 QC Batch ID: WG1663374-1 QC Sample: L2237706-01 Client ID: PB-883-01-SS01						
Solids, Total	83.2	83.8	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent
D	Absent
E	Absent
F	Absent
G	Absent
H	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-01A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-01B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-01C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-01D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-01F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-02A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-02B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-02C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-02D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-02F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-03A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-03B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-03C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-03D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-03F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-04A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-04B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-04C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-04D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-04F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-05A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-05B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-05C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-05D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-05E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-05F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-06A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-06B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-06C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-06D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-06E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-06F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-07A	Vial MeOH preserved	B	NA		4.7	Y	Absent		PA-8260HLW(14)
L2237706-07B	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-07C	Vial water preserved	B	NA		4.7	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-07D	Plastic 120ml unpreserved	B	NA		4.7	Y	Absent		TS(7)
L2237706-07E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		4.7	Y	Absent		PB-TI(180)
L2237706-07F	Glass 120ml/4oz unpreserved	B	NA		4.7	Y	Absent		PA-PAH(14)
L2237706-08A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-08B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-08C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-08D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-08E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-08F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-09A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-09B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-09C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-09D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-09E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-09F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-10A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-10B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-10C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-10D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-10E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-10F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-11A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-11B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-11C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-11D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-11E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-11F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-12A	Vial water preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-12B	Vial MeOH preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-12C	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-12D	Plastic 120ml unpreserved	H	NA		2.4	Y	Absent		TS(7)
L2237706-12E	Metals Only-Glass 60mL/2oz unpreserved	H	NA		2.4	Y	Absent		PB-TI(180)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-12F	Glass 120ml/4oz unpreserved	H	NA		2.4	Y	Absent		PA-PAH(14)
L2237706-13A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-13B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-13C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-13D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-13E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-13F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-14A	Vial MeOH preserved	G	NA		4.0	Y	Absent		PA-8260HLW(14)
L2237706-14B	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-14C	Vial water preserved	G	NA		4.0	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-14D	Plastic 120ml unpreserved	G	NA		4.0	Y	Absent		TS(7)
L2237706-14E	Metals Only-Glass 60mL/2oz unpreserved	G	NA		4.0	Y	Absent		PB-TI(180)
L2237706-14F	Glass 120ml/4oz unpreserved	G	NA		4.0	Y	Absent		PA-PAH(14)
L2237706-15A	Vial MeOH preserved	D	NA		5.1	Y	Absent		PA-8260HLW(14)
L2237706-15B	Vial water preserved	D	NA		5.1	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-15C	Vial water preserved	D	NA		5.1	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-15D	Plastic 120ml unpreserved	D	NA		5.1	Y	Absent		TS(7)
L2237706-15E	Metals Only-Glass 60mL/2oz unpreserved	D	NA		5.1	Y	Absent		PB-TI(180)
L2237706-15F	Glass 120ml/4oz unpreserved	D	NA		5.1	Y	Absent		PA-PAH(14)
L2237706-16A	Vial MeOH preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-16B	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-16C	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-16D	Plastic 120ml unpreserved	H	NA		2.4	Y	Absent		TS(7)
L2237706-16E	Metals Only-Glass 60mL/2oz unpreserved	H	NA		2.4	Y	Absent		PB-TI(180)
L2237706-16F	Glass 120ml/4oz unpreserved	H	NA		2.4	Y	Absent		PA-PAH(14)
L2237706-17A	Vial MeOH preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-17B	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-17C	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2237706**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2237706-17D	Plastic 120ml unpreserved	H	NA		2.4	Y	Absent		TS(7)
L2237706-17E	Metals Only-Glass 60mL/2oz unpreserved	H	NA		2.4	Y	Absent		PB-TI(180)
L2237706-17F	Glass 120ml/4oz unpreserved	H	NA		2.4	Y	Absent		PA-PAH(14)
L2237706-18A	Vial MeOH preserved	H	NA		2.4	Y	Absent		PA-8260HLW(14)
L2237706-18B	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-18C	Vial water preserved	H	NA		2.4	Y	Absent	15-JUL-22 05:36	PA-8260HLW(14)
L2237706-18D	Plastic 120ml unpreserved	H	NA		2.4	Y	Absent		TS(7)
L2237706-18E	Metals Only-Glass 60mL/2oz unpreserved	H	NA		2.4	Y	Absent		PB-TI(180)
L2237706-18F	Glass 120ml/4oz unpreserved	H	NA		2.4	Y	Absent		PA-PAH(14)
L2237706-19A	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-19B	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-19C	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-19D	Vial HCl preserved	D	NA		5.1	Y	Absent		8011(14)
L2237706-19E	Vial HCl preserved	D	NA		5.1	Y	Absent		8011(14)
L2237706-19F	Plastic 250ml HNO3 preserved	D	<2	<2	5.1	Y	Absent		PB-6020T-PPB(180)
L2237706-19G	Amber 250ml unpreserved	D	7	7	5.1	Y	Absent		PA-PAHSIM-LVI(7)
L2237706-19H	Amber 250ml unpreserved	D	7	7	5.1	Y	Absent		PA-PAHSIM-LVI(7)
L2237706-20A	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-20B	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-20C	Vial HCl preserved	D	NA		5.1	Y	Absent		PA-8260(14)
L2237706-20D	Vial HCl preserved	D	NA		5.1	Y	Absent		8011(14)
L2237706-20E	Vial HCl preserved	D	NA		5.1	Y	Absent		8011(14)
L2237706-20F	Plastic 250ml HNO3 preserved	D	<2	<2	5.1	Y	Absent		PB-6020T-PPB(180)
L2237706-20G	Amber 250ml unpreserved	D	7	7	5.1	Y	Absent		PA-PAHSIM-LVI(7)
L2237706-20H	Amber 250ml unpreserved	D	7	7	5.1	Y	Absent		PA-PAHSIM-LVI(7)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2237706
Report Date: 07/22/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2237706

Project Number: 200.00135.006

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

PADEP Short List Analytical Suites per Table III-5:

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene



ANALYTICAL REPORT

Lab Number:	L2238021
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/22/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

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508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2238021-01	PB-884-24-SS01	SOIL	PHILADELPHIA, PA	07/15/22 08:15	07/15/22
L2238021-02	PB-884-25-SS01	SOIL	PHILADELPHIA, PA	07/15/22 08:30	07/15/22
L2238021-03	PB-886-06-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:00	07/15/22
L2238021-04	PB-886-07-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:15	07/15/22
L2238021-05	PB-886-10-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:30	07/15/22
L2238021-06	PB-886-13-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:45	07/15/22
L2238021-07	PB-886-14-SS01	SOIL	PHILADELPHIA, PA	07/15/22 10:00	07/15/22
L2238021-08	PB-886-15-SS01	SOIL	PHILADELPHIA, PA	07/15/22 10:15	07/15/22
L2238021-09	PB-886-19-SS01	SOIL	PHILADELPHIA, PA	07/15/22 10:30	07/15/22
L2238021-10	PB-886-20-SS01	SOIL	PHILADELPHIA, PA	07/15/22 10:45	07/15/22
L2238021-11	PB-191-03-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:00	07/15/22
L2238021-12	DUP-46	SOIL	PHILADELPHIA, PA	07/15/22 00:00	07/15/22
L2238021-13	FB-07152022-2	WATER	PHILADELPHIA, PA	07/15/22 11:15	07/15/22
L2238021-14	FB-07152022-3	WATER	PHILADELPHIA, PA	07/15/22 11:30	07/15/22
L2238021-15	TB-071522	WATER	PHILADELPHIA, PA	07/15/22 00:00	07/15/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2238021-02: The surrogate recoveries are outside the acceptance criteria for toluene-d8 (157%) and 4-bromofluorobenzene (166%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2238021-02D: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (135%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2238021-05: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (173%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Total Metals

L2238021-01: The sample has an elevated detection limit for lead due to the dilution required by matrix interferences encountered during analysis.

The WG1664023-3 MS recovery, performed on L2238021-01, is outside the acceptance criteria for lead (38%). A post digestion spike was performed and was within acceptance criteria.

The WG1664023-4 Laboratory Duplicate RPD for lead (21%), performed on L2238021-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 07/22/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-01
 Client ID: PB-884-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 11:02
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	0.034		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00032	1
Toluene	ND		mg/kg	0.0013	0.00069	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	0.095		mg/kg	0.0013	0.00018	1
p/m-Xylene	0.33		mg/kg	0.0025	0.00071	1
o-Xylene	0.032		mg/kg	0.0013	0.00037	1
Xylenes, Total	0.36		mg/kg	0.0013	0.00037	1
Isopropylbenzene	0.030		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	0.042		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	0.13		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	76		70-130
Toluene-d8	109		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	76		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-02
 Client ID: PB-884-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 11:29
 Analyst: JC
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.11	0.011	1
Benzene	7.1		mg/kg	0.027	0.0090	1
1,2-Dichloroethane	ND		mg/kg	0.054	0.014	1
Toluene	16.	E	mg/kg	0.054	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.027	0.016	1
Ethylbenzene	9.4		mg/kg	0.054	0.0077	1
p/m-Xylene	29.		mg/kg	0.11	0.030	1
o-Xylene	12.		mg/kg	0.054	0.016	1
Xylenes, Total	41.		mg/kg	0.054	0.016	1
Isopropylbenzene	3.0		mg/kg	0.054	0.0059	1
1,3,5-Trimethylbenzene	3.8		mg/kg	0.11	0.010	1
1,2,4-Trimethylbenzene	12.		mg/kg	0.11	0.018	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	74		70-130
Toluene-d8	157	Q	70-130
4-Bromofluorobenzene	166	Q	70-130
Dibromofluoromethane	70		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-02 D
 Client ID: PB-884-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/21/22 18:41
 Analyst: AJK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Toluene	15.		mg/kg	0.11	0.059	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	75		70-130
Toluene-d8	129		70-130
4-Bromofluorobenzene	135	Q	70-130
Dibromofluoromethane	71		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-03
 Client ID: PB-886-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 16:40
 Analyst: AJK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00022	1
Benzene	ND		mg/kg	0.00054	0.00018	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00028	1
Toluene	ND		mg/kg	0.0011	0.00058	1
1,2-Dibromoethane	ND		mg/kg	0.00054	0.00031	1
Ethylbenzene	ND		mg/kg	0.0011	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00060	1
o-Xylene	ND		mg/kg	0.0011	0.00031	1
Xylenes, Total	ND		mg/kg	0.0011	0.00031	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00021	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00036	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-04
 Client ID: PB-886-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:12
 Analyst: AJK
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0047	0.00048	1
Benzene	ND		mg/kg	0.0012	0.00039	1
1,2-Dichloroethane	ND		mg/kg	0.0024	0.00061	1
Toluene	ND		mg/kg	0.0024	0.0013	1
1,2-Dibromoethane	ND		mg/kg	0.0012	0.00070	1
Ethylbenzene	ND		mg/kg	0.0024	0.00033	1
p/m-Xylene	ND		mg/kg	0.0047	0.0013	1
o-Xylene	ND		mg/kg	0.0024	0.00069	1
Xylenes, Total	ND		mg/kg	0.0024	0.00069	1
Isopropylbenzene	ND		mg/kg	0.0024	0.00026	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0047	0.00046	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0047	0.00079	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	99		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-05
 Client ID: PB-886-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 17:43
 Analyst: AJK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00024	1
Benzene	ND		mg/kg	0.00060	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00065	1
1,2-Dibromoethane	ND		mg/kg	0.00060	0.00035	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00067	1
o-Xylene	0.00053	J	mg/kg	0.0012	0.00035	1
Xylenes, Total	0.00053	J	mg/kg	0.0012	0.00035	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	0.0014	J	mg/kg	0.0024	0.00023	1
1,2,4-Trimethylbenzene	0.00084	J	mg/kg	0.0024	0.00040	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	173	Q	70-130
Dibromofluoromethane	103		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-06
 Client ID: PB-886-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:45
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 18:13
 Analyst: AJK
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0043	0.00043	1
Benzene	ND		mg/kg	0.0011	0.00036	1
1,2-Dichloroethane	ND		mg/kg	0.0021	0.00055	1
Toluene	ND		mg/kg	0.0021	0.0012	1
1,2-Dibromoethane	ND		mg/kg	0.0011	0.00063	1
Ethylbenzene	ND		mg/kg	0.0021	0.00030	1
p/m-Xylene	ND		mg/kg	0.0043	0.0012	1
o-Xylene	ND		mg/kg	0.0021	0.00062	1
Xylenes, Total	ND		mg/kg	0.0021	0.00062	1
Isopropylbenzene	ND		mg/kg	0.0021	0.00023	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0043	0.00041	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0043	0.00072	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	95		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-07
 Client ID: PB-886-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 18:43
 Analyst: AJK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00025	1
Benzene	ND		mg/kg	0.00061	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00031	1
Toluene	ND		mg/kg	0.0012	0.00066	1
1,2-Dibromoethane	ND		mg/kg	0.00061	0.00036	1
Ethylbenzene	ND		mg/kg	0.0012	0.00017	1
p/m-Xylene	ND		mg/kg	0.0024	0.00068	1
o-Xylene	ND		mg/kg	0.0012	0.00036	1
Xylenes, Total	ND		mg/kg	0.0012	0.00036	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0024	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0024	0.00041	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-08
 Client ID: PB-886-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 19:14
 Analyst: AJK
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00035	1
Benzene	ND		mg/kg	0.00087	0.00029	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00045	1
Toluene	ND		mg/kg	0.0017	0.00094	1
1,2-Dibromoethane	ND		mg/kg	0.00087	0.00051	1
Ethylbenzene	ND		mg/kg	0.0017	0.00024	1
p/m-Xylene	ND		mg/kg	0.0035	0.00097	1
o-Xylene	ND		mg/kg	0.0017	0.00051	1
Xylenes, Total	ND		mg/kg	0.0017	0.00051	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00019	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0035	0.00034	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0035	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-09
 Client ID: PB-886-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 00:14
 Analyst: JC
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00027	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00039	1
Xylenes, Total	ND		mg/kg	0.0013	0.00039	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00026	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-10
 Client ID: PB-886-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:45
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 00:43
 Analyst: JC
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00025	1
Benzene	ND		mg/kg	0.00063	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00032	1
Toluene	ND		mg/kg	0.0012	0.00068	1
1,2-Dibromoethane	ND		mg/kg	0.00063	0.00037	1
Ethylbenzene	ND		mg/kg	0.0012	0.00018	1
p/m-Xylene	ND		mg/kg	0.0025	0.00070	1
o-Xylene	ND		mg/kg	0.0012	0.00037	1
Xylenes, Total	ND		mg/kg	0.0012	0.00037	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0025	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0025	0.00042	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-11
 Client ID: PB-191-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 01:11
 Analyst: JC
 Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00026	1
Benzene	ND		mg/kg	0.00066	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00034	1
Toluene	ND		mg/kg	0.0013	0.00072	1
1,2-Dibromoethane	ND		mg/kg	0.00066	0.00039	1
Ethylbenzene	ND		mg/kg	0.0013	0.00018	1
p/m-Xylene	ND		mg/kg	0.0026	0.00074	1
o-Xylene	ND		mg/kg	0.0013	0.00038	1
Xylenes, Total	ND		mg/kg	0.0013	0.00038	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0026	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0026	0.00044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-12
 Client ID: DUP-46
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 01:40
 Analyst: JC
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0033	0.00033	1
Benzene	ND		mg/kg	0.00083	0.00028	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00043	1
Toluene	ND		mg/kg	0.0017	0.00090	1
1,2-Dibromoethane	ND		mg/kg	0.00083	0.00049	1
Ethylbenzene	ND		mg/kg	0.0017	0.00023	1
p/m-Xylene	ND		mg/kg	0.0033	0.00093	1
o-Xylene	ND		mg/kg	0.0017	0.00048	1
Xylenes, Total	ND		mg/kg	0.0017	0.00048	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00018	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0033	0.00032	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0033	0.00056	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-13
 Client ID: FB-07152022-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/20/22 15:50
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-13
 Client ID: FB-07152022-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 13:28
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	127		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-14
 Client ID: FB-07152022-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/20/22 15:56
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-14
 Client ID: FB-07152022-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 13:55
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	129		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-15
 Client ID: TB-071522
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/20/22 16:03
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-15
 Client ID: TB-071522
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 14:21
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	123		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	131	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/20/22 14:35
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 13-15 Batch: WG1664686-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/19/22 09:51
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03-08 Batch: WG1664964-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/19/22 23:46
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 09-12 Batch: WG1665206-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	93		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:50
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1665306-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	90		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/20/22 08:50
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 02 Batch: WG1665578-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	91		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:41
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 13-15 Batch: WG1665694-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	124		70-130



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 07/21/22 11:39
Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 02 Batch: WG1666031-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
1,2-Dichloroethane	ND		mg/kg	0.050	0.013
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	86		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238021

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 13-15 Batch: WG1664686-2									
1,2-Dibromoethane	93		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03-08 Batch: WG1664964-3 WG1664964-4								
Methyl tert butyl ether	122		119		66-130	2		30
Benzene	110		103		70-130	7		30
1,2-Dichloroethane	102		100		70-130	2		30
Toluene	108		103		70-130	5		30
1,2-Dibromoethane	109		109		70-130	0		30
Ethylbenzene	107		102		70-130	5		30
p/m-Xylene	109		103		70-130	6		30
o-Xylene	108		103		70-130	5		30
Isopropylbenzene	110		103		70-130	7		30
1,3,5-Trimethylbenzene	107		101		70-130	6		30
1,2,4-Trimethylbenzene	108		102		70-130	6		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		96		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	105		105		70-130
Dibromofluoromethane	93		92		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 09-12 Batch: WG1665206-3 WG1665206-4								
Methyl tert butyl ether	116		115		66-130	1		30
Benzene	107		106		70-130	1		30
1,2-Dichloroethane	98		98		70-130	0		30
Toluene	105		105		70-130	0		30
1,2-Dibromoethane	104		104		70-130	0		30
Ethylbenzene	104		104		70-130	0		30
p/m-Xylene	105		105		70-130	0		30
o-Xylene	105		104		70-130	1		30
Isopropylbenzene	108		108		70-130	0		30
1,3,5-Trimethylbenzene	104		104		70-130	0		30
1,2,4-Trimethylbenzene	105		105		70-130	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	101		102		70-130
4-Bromofluorobenzene	106		105		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1665306-3 WG1665306-4								
Methyl tert butyl ether	100		98		66-130	2		30
Benzene	88		84		70-130	5		30
1,2-Dichloroethane	69	Q	66	Q	70-130	4		30
Toluene	88		85		70-130	3		30
1,2-Dibromoethane	85		83		70-130	2		30
Ethylbenzene	85		82		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	92		89		70-130	3		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	104		103		70-130
Dibromofluoromethane	78		77		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 02 Batch: WG1665578-3 WG1665578-4								
Methyl tert butyl ether	100		98		66-130	2		30
Benzene	88		84		70-130	5		30
1,2-Dichloroethane	69	Q	66	Q	70-130	4		30
Toluene	88		85		70-130	3		30
1,2-Dibromoethane	85		83		70-130	2		30
Ethylbenzene	85		82		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	87		84		70-130	4		30
Isopropylbenzene	92		89		70-130	3		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	87		85		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	76		75		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	104		103		70-130
Dibromofluoromethane	78		77		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 13-15 Batch: WG1665694-3 WG1665694-4								
Methyl tert butyl ether	87		94		63-130	8		20
Benzene	110		110		70-130	0		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	99		100		70-130	1		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	100		100		70-130	0		20
Isopropylbenzene	91		92		70-130	1		20
1,3,5-Trimethylbenzene	94		95		64-130	1		20
1,2,4-Trimethylbenzene	93		94		70-130	1		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	87		87		70-130
Dibromofluoromethane	110		110		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 02 Batch: WG1666031-3 WG1666031-4								
Methyl tert butyl ether	102		101		66-130	1		30
Benzene	86		86		70-130	0		30
1,2-Dichloroethane	66	Q	66	Q	70-130	0		30
Toluene	90		88		70-130	2		30
1,2-Dibromoethane	84		85		70-130	1		30
Ethylbenzene	86		83		70-130	4		30
p/m-Xylene	88		86		70-130	2		30
o-Xylene	89		85		70-130	5		30
Isopropylbenzene	93		91		70-130	2		30
1,3,5-Trimethylbenzene	88		86		70-130	2		30
1,2,4-Trimethylbenzene	86		85		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	72		74		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	103		104		70-130
Dibromofluoromethane	75		75		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-01
 Client ID: PB-884-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:34
 Analyst: IM
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.082	J	mg/kg	0.20	0.025	1
Fluorene	ND		mg/kg	0.20	0.020	1
Phenanthrene	0.042	J	mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.051	J	mg/kg	0.12	0.020	1
Benzo(a)anthracene	0.048	J	mg/kg	0.12	0.023	1
Chrysene	0.040	J	mg/kg	0.12	0.021	1
Benzo(b)fluoranthene	0.046	J	mg/kg	0.12	0.034	1
Benzo(a)pyrene	ND		mg/kg	0.16	0.050	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	82		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-02
 Client ID: PB-884-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:58
 Analyst: IM
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	2.1		mg/kg	0.18	0.022	1
Fluorene	0.31		mg/kg	0.18	0.017	1
Phenanthrene	0.53		mg/kg	0.11	0.022	1
Anthracene	0.035	J	mg/kg	0.11	0.035	1
Pyrene	0.048	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	0.022	J	mg/kg	0.11	0.020	1
Chrysene	0.084	J	mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	122	Q	23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	83		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-03
 Client ID: PB-886-06-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 17:22
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	89		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-04
 Client ID: PB-886-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 17:47
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	93		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-05
 Client ID: PB-886-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 12:55
 Analyst: IM
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.041	J	mg/kg	0.18	0.022	1
Fluorene	0.35		mg/kg	0.18	0.017	1
Phenanthrene	0.78		mg/kg	0.11	0.022	1
Anthracene	0.16		mg/kg	0.11	0.034	1
Pyrene	0.049	J	mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	54		30-120
4-Terphenyl-d14	68		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-06
 Client ID: PB-886-13-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:45
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 13:19
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	52		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-07
 Client ID: PB-886-14-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:11
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	89		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-08
 Client ID: PB-886-15-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 18:35
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	84		30-120
4-Terphenyl-d14	95		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-09
 Client ID: PB-886-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 13:44
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	59		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-10
 Client ID: PB-886-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:45
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 14:08
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	75		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-11
 Client ID: PB-191-03-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 14:32
 Analyst: IM
 Percent Solids: 80%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.21	0.025	1
Fluorene	ND		mg/kg	0.21	0.020	1
Phenanthrene	ND		mg/kg	0.12	0.025	1
Anthracene	ND		mg/kg	0.12	0.040	1
Pyrene	0.16		mg/kg	0.12	0.021	1
Benzo(a)anthracene	0.11	J	mg/kg	0.12	0.023	1
Chrysene	0.10	J	mg/kg	0.12	0.022	1
Benzo(b)fluoranthene	0.13		mg/kg	0.12	0.035	1
Benzo(a)pyrene	0.12	J	mg/kg	0.17	0.051	1
Indeno(1,2,3-cd)pyrene	0.070	J	mg/kg	0.17	0.029	1
Benzo(ghi)perylene	0.060	J	mg/kg	0.17	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	66		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-12
 Client ID: DUP-46
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 14:57
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	59		23-120
2-Fluorobiphenyl	52		30-120
4-Terphenyl-d14	56		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-13
 Client ID: FB-07152022-2
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 19:12
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/16/22 08:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.09	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	0.04	J	ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02	1
Chrysene	0.01	J	ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	36		23-120
2-Fluorobiphenyl	39		15-120
4-Terphenyl-d14	45		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-14
 Client ID: FB-07152022-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/22/22 13:35
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/21/22 15:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02	1
Chrysene	0.02	J	ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.04	J	ug/l	0.05	0.01	1
Benzo(a)pyrene	0.02	J	ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	0.03	J	ug/l	0.10	0.01	1
Benzo(ghi)perylene	0.03	J	ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	42		23-120
2-Fluorobiphenyl	41		15-120
4-Terphenyl-d14	39	Q	41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 07/17/22 16:33
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/16/22 08:39

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 13 Batch: WG1663655-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	41		15-120
4-Terphenyl-d14	49		41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/18/22 11:42
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-12 Batch: WG1663763-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Indeno(1,2,3-cd)pyrene	ND		mg/kg	0.13	0.023
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	88		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/22/22 12:13
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/21/22 15:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 14 Batch: WG1665807-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	0.01	J	ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	81		15-120
4-Terphenyl-d14	86		41-149

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 13 Batch: WG1663655-2 WG1663655-3								
Naphthalene	80		69		40-140	15		40
Fluorene	83		73		40-140	13		40
Phenanthrene	84		73		40-140	14		40
Anthracene	85		74		40-140	14		40
Pyrene	92		80		26-127	14		40
Benzo(a)anthracene	84		73		40-140	14		40
Chrysene	87		78		40-140	11		40
Benzo(b)fluoranthene	88		85		40-140	3		40
Benzo(a)pyrene	87		76		40-140	13		40
Indeno(1,2,3-cd)pyrene	98		88		40-140	11		40
Benzo(ghi)perylene	97		85		40-140	13		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	40		35		23-120
2-Fluorobiphenyl	42		37		15-120
4-Terphenyl-d14	47		42		41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-12 Batch: WG1663763-2 WG1663763-3								
Naphthalene	68		62		40-140	9		50
Fluorene	71		64		40-140	10		50
Phenanthrene	66		62		40-140	6		50
Anthracene	69		65		40-140	6		50
Pyrene	74		62		35-142	18		50
Benzo(a)anthracene	71		66		40-140	7		50
Chrysene	71		66		40-140	7		50
Benzo(b)fluoranthene	74		67		40-140	10		50
Benzo(a)pyrene	78		62		40-140	23		50
Indeno(1,2,3-cd)pyrene	74		76		40-140	3		50
Benzo(ghi)perylene	66		65		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	76		70		23-120
2-Fluorobiphenyl	71		65		30-120
4-Terphenyl-d14	80		66		18-120



Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 14 Batch: WG1665807-2 WG1665807-3								
Naphthalene	84		79		40-140	6		40
Fluorene	89		86		40-140	3		40
Phenanthrene	88		82		40-140	7		40
Anthracene	90		81		40-140	11		40
Pyrene	89		77		26-127	14		40
Benzo(a)anthracene	90		84		40-140	7		40
Chrysene	89		82		40-140	8		40
Benzo(b)fluoranthene	92		85		40-140	8		40
Benzo(a)pyrene	90		84		40-140	7		40
Indeno(1,2,3-cd)pyrene	99		93		40-140	6		40
Benzo(ghi)perylene	97		91		40-140	6		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	84		78		23-120
2-Fluorobiphenyl	84		75		15-120
4-Terphenyl-d14	88		73		41-149



METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-01

Date Collected: 07/15/22 08:15

Client ID: PB-884-24-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	45.9		mg/kg	11.7	0.626	5	07/18/22 08:15	07/18/22 17:41	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-02
 Client ID: PB-884-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 08:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.11		mg/kg	2.13	0.114	1	07/18/22 08:15	07/18/22 18:17	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-03

Date Collected: 07/15/22 09:00

Client ID: PB-886-06-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.26		mg/kg	2.20	0.118	1	07/18/22 08:15	07/18/22 18:22	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-04
 Client ID: PB-886-07-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:15
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.62		mg/kg	2.23	0.119	1	07/18/22 08:15	07/18/22 18:27	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-05

Date Collected: 07/15/22 09:30

Client ID: PB-886-10-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.97	J	mg/kg	2.11	0.113	1	07/18/22 08:15	07/18/22 18:31	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-06

Date Collected: 07/15/22 09:45

Client ID: PB-886-13-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	3.04		mg/kg	2.26	0.121	1	07/18/22 08:15	07/18/22 18:36	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-07

Date Collected: 07/15/22 10:00

Client ID: PB-886-14-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.16	J	mg/kg	2.18	0.117	1	07/18/22 08:15	07/18/22 18:41	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-08

Date Collected: 07/15/22 10:15

Client ID: PB-886-15-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.56		mg/kg	2.20	0.118	1	07/18/22 08:15	07/18/22 18:46	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-09
 Client ID: PB-886-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.28		mg/kg	2.24	0.120	1	07/18/22 08:15	07/18/22 18:51	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-10
 Client ID: PB-886-20-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 10:45
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.19	J	mg/kg	2.22	0.119	1	07/18/22 08:15	07/18/22 18:55	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-11

Date Collected: 07/15/22 11:00

Client ID: PB-191-03-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 80%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	19.8		mg/kg	2.41	0.129	1	07/18/22 08:15	07/18/22 19:00	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-12

Date Collected: 07/15/22 00:00

Client ID: DUP-46

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.04	J	mg/kg	2.14	0.115	1	07/18/22 08:15	07/18/22 19:14	EPA 3050B	1,6010D	NB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-13

Date Collected: 07/15/22 11:15

Client ID: FB-07152022-2

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 19:59	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-14
 Client ID: FB-07152022-3
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 20:57	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-12 Batch: WG1664023-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/18/22 08:15	07/18/22 16:10	1,6010D	NB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 13-14 Batch: WG1664131-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 18:48	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-12 Batch: WG1664023-2 SRM Lot Number: D113-540								
Lead, Total	98		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 13-14 Batch: WG1664131-2								
Lead, Total	104		-		80-120	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-12 QC Batch ID: WG1664023-3 QC Sample: L2238021-01 Client ID: PB-884-24-SS01												
Lead, Total	45.9	51.2	65.5	38	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 13-14 QC Batch ID: WG1664131-3 QC Sample: L2237200-07 Client ID: MS Sample												
Lead, Total	ND	530	528.2	100		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238021

Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-12 QC Batch ID: WG1664023-4 QC Sample: L2238021-01 Client ID: PB-884-24-SS01						
Lead, Total	45.9	37.0	mg/kg	21	Q	20
Total Metals - Mansfield Lab Associated sample(s): 13-14 QC Batch ID: WG1664131-4 QC Sample: L2237200-07 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-01

Date Collected: 07/15/22 08:15

Client ID: PB-884-24-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238021-02

Date Collected: 07/15/22 08:30

Client ID: PB-884-25-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.1		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-03

Date Collected: 07/15/22 09:00

Client ID: PB-886-06-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.7		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-04

Date Collected: 07/15/22 09:15

Client ID: PB-886-07-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-05
 Client ID: PB-886-10-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.5		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-06

Date Collected: 07/15/22 09:45

Client ID: PB-886-13-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.9		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-07

Date Collected: 07/15/22 10:00

Client ID: PB-886-14-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.2		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238021-08

Date Collected: 07/15/22 10:15

Client ID: PB-886-15-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.1		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238021-09

Date Collected: 07/15/22 10:30

Client ID: PB-886-19-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.9		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-10

Date Collected: 07/15/22 10:45

Client ID: PB-886-20-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.6		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-11

Date Collected: 07/15/22 11:00

Client ID: PB-191-03-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.2		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238021-12

Date Collected: 07/15/22 00:00

Client ID: DUP-46

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.5		%	0.100	NA	1	-	07/16/22 11:52	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238021

Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-12 QC Batch ID: WG1663681-1 QC Sample: L2237931-01 Client ID: DUP Sample						
Solids, Total	82.6	82.0	%	1		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238021-01A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-01B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-01C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-01D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-01E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-01F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-02A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-02B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-02C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-02D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-02E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-02F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-03A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-03B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-03C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-03D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-03E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-03F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-04A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-04B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-04C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238021-04D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-04E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-04F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-05A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-05B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-05C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-05D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-05E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-05F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-06A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-06B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-06C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-06D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-06E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-06F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-07A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-07B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-07C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-07D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-07E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-07F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-08A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2238021-08B	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-08C	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-08D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2238021-08E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2238021-08F	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		PA-PAH(14)
L2238021-09A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238021-09B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-09C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-09D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-09E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-09F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-10A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-10B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-10C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238021-10D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-10E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-10F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-11A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-11B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-11C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-11D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-11E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-11F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-12A	Vial MeOH preserved	C	NA		4.1	Y	Absent		PA-8260HLW(14)
L2238021-12B	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-12C	Vial water preserved	C	NA		4.1	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238021-12D	Plastic 2oz unpreserved for TS	C	NA		4.1	Y	Absent		TS(7)
L2238021-12E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.1	Y	Absent		PB-TI(180)
L2238021-12F	Glass 120ml/4oz unpreserved	C	NA		4.1	Y	Absent		PA-PAH(14)
L2238021-13A	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-13B	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-13C	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-13D	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238021-13E	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238021**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238021-13F	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238021-13G	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238021-13H	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		PB-6020T-PPB(180)
L2238021-14A	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-14B	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-14C	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-14D	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238021-14E	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238021-14F	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238021-14G	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238021-14H	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		PB-6020T-PPB(180)
L2238021-15A	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-15B	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238021-15C	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238021-15D	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238021
Report Date: 07/22/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238021

Project Number: 200.00135.006

Report Date: 07/22/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY PAGE 1 OF 2



Project Information

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3286

Project Name: Philadelphia Refinery

Client Information

Client: Ransom Consulting, LLC
 Address: 2127 Hamilton Avenue
 Trenton, NJ 08619
 Phone: 215-901-4974

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

Turn-Around Time

Fax: Standard Rush (ONLY IF PRE-APPROVED)
 Email: William.Schmidt@ransomenv.com
 These samples have been Previously analyzed by Alpha Due Date: Time:

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/16/22

ALPHA Job #: L2238029

Report Information Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program: Criteria:

ANALYSIS

SHORTLIST 1-5

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Preservation
 Lab to do
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials
		Date	Time		
38021-01	PB-884-21-5501	7/15	0815	S	TS
-02	PB-884-25-5501	↓	0830	↓	↓
-03	PB-886-06-5501	↓	0900	↓	↓
-04	PB-886-07-5501	↓	0915	↓	↓
-05	PB-886-10-5501	↓	0930	↓	↓
-06	PB-886-13-5501	↓	0945	↓	↓
-07	PB-886-14-5501	↓	1000	↓	↓
-08	PB-886-15-5501	↓	1015	↓	↓
-09	PB-886-19-5501	↓	1030	↓	↓
-10	PB-886-20-5501	↓	1045	↓	↓

Container Type: - - G - - - - -
 Preservative: - - - - -

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	7/15 15:15	<i>[Signature]</i>	7/15/22 15:15
<i>[Signature]</i>	7/15/22 18:00	<i>[Signature]</i>	7/15/22 18:00
<i>[Signature]</i>	7/15/22 21:00	<i>[Signature]</i>	7/15/22 21:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

CHAIN OF CUSTODY

PAGE 2 of 2



Project Information

Project Name: Philadelphia Refinery

Project Location: Philadelphia, PA

Project #: 200.00135.006

Project Manager: William Schmidt

ALPHA Quote #: 18599

Turn-Around Time

Standard Rush (ONLY IF PRE-APPROVED)

Due Date: Time:

Westborough, MA Mansfield, MA
 TEL: 508-898-9220 TEL: 508-822-9300
 FAX: 508-898-9193 FAX: 508-822-3288

Client Information

Client: Ransom Consulting, LLC

Address: 2127 Hamilton Avenue

Trenton, NJ 08619

Phone: 215-901-4974

Fax:

Email: William.Schmidt@ransomenv.com

These samples have been Previously analyzed by Alpha

Other Project Specific Requirements/Comments/Detection Limits:

Report only attached project-specific analyte list of PADEP Leaded/Unleaded Gasoline and No. 2, 4, 5, and 6 Fuel Oil Shortlist. Run Naphthalene using Method 8270 ONLY!! Email results to edd@terrphase.com, William.Schmidt@ransomenv.com, and jjeray@hilcoglobal.com

Date Rec'd in Lab: 7/16/22

ALPHA Job #: L2238021

Report Information Data Deliverables

FAX EMAIL
 ADEX Add'l Deliverables

Billing Information

Same as Client info PO #: 3562

Regulatory Requirements/Report Limits

State/Fed Program Criteria

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
2021-01	PB-141-03-5501	7/15	1100	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
72	DUP-46		-	S	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
73	FB-071522-2		1115	W	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
74	FB-071522-3		1130	W	TS	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
75	TB-071522		-	W	TS	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SHORTLIST 1-6
 SHORTLIST 1-6
 VOC PORTION OF SLI-6
 EDB (8011)

SAMPLE HANDLING
 Filtration
 Done
 Not Needed
 Preservation
 Lab to do
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

Sample Specific Comments

Container Type	-	-	G	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Preservative	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Relinquished By:	Date/Time	Received By:	Date/Time
<i>[Signature]</i>	7/15/22 15:15	<i>[Signature]</i>	7/15/22 15:15
<i>[Signature]</i>	7/15/22 15:15	<i>[Signature]</i>	7/15/22 15:15
<i>[Signature]</i>	7/15/22 15:15	<i>[Signature]</i>	7/15/22 15:15

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms.

PADEP Short List Analytical Suites per Table III-5:

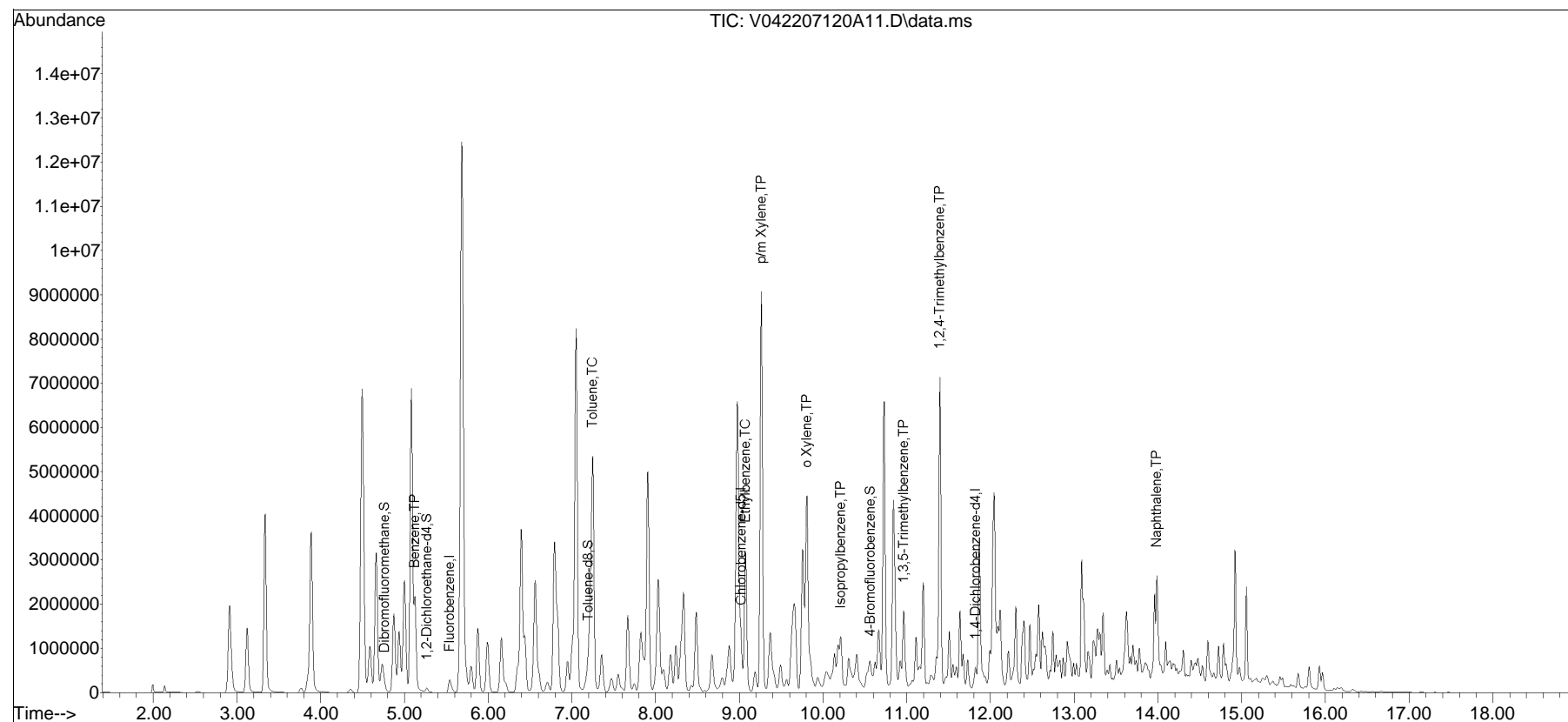
1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\2207120A\
Data File : V042207120A11.D
Acq On : 20 Jul 2022 11:29 am
Operator : VOA104:JC
Sample : L2238021-02,31H,5.41,5,0.100,,A,R2F
Misc : WG1665578,ICAL19119
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Jul 21 07:02:24 2022
Quant Method : I:\VOLATILES\VOA104\2022\2207120A\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list120A\V042207120A01.D•

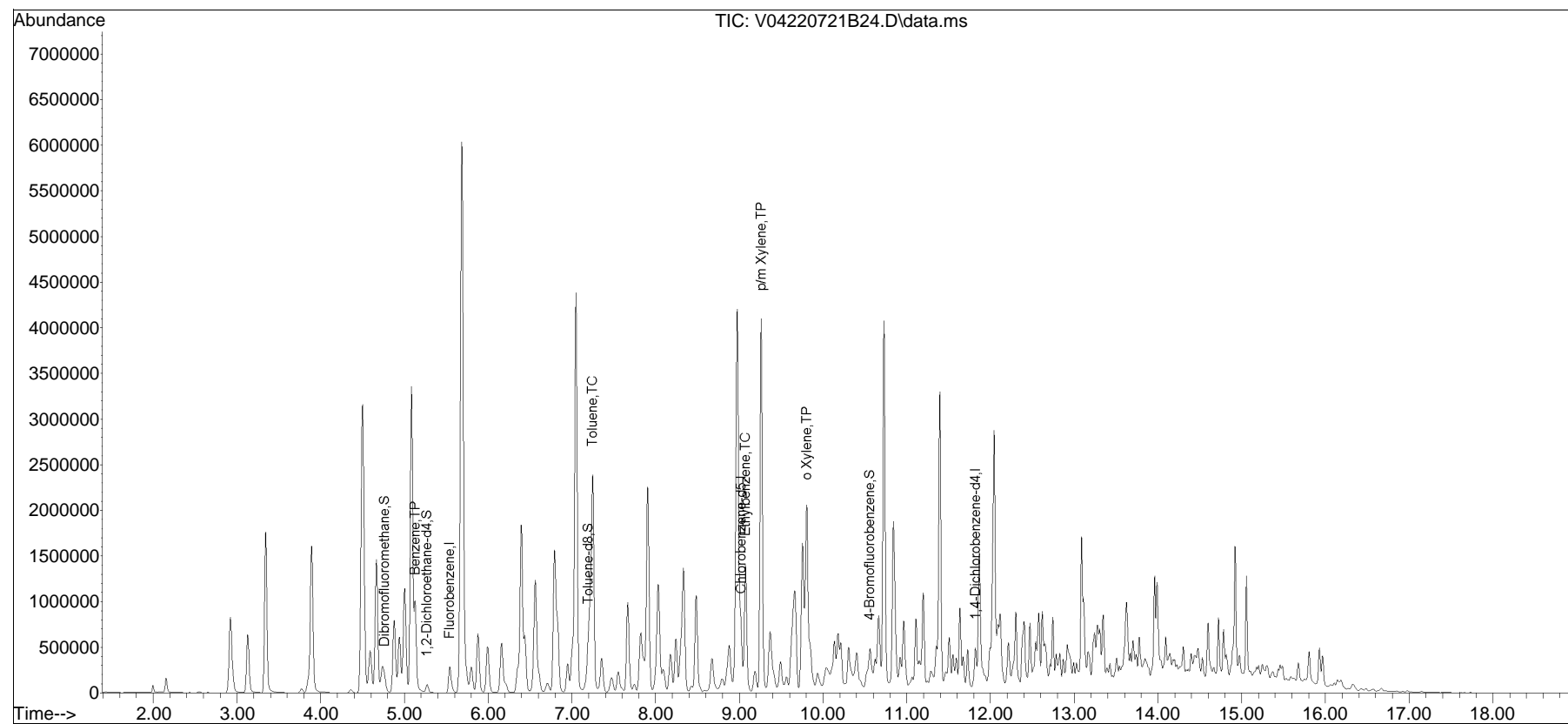


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA104\2022\220721B\
Data File : V04220721B24.D
Acq On : 21 Jul 2022 6:41 pm
Operator : VOA104:AJK
Sample : L2238021-02D,31H,5.42,5,0.050,,A,R2F
Misc : WG1666031,ICAL19119
ALS Vial : 24 Sample Multiplier: 1

Quant Time: Jul 21 23:27:34 2022
Quant Method : I:\VOLATILES\VOA104\2022\220721B\V104_220621A_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Wed Jun 22 06:56:43 2022
Response via : Initial Calibration

Sub List : 8260-BTEX - Standard BTEX List20721B\V04220721B04.D•



V104_220621A_8260.m Fri Jul 22 06:51:44 2022

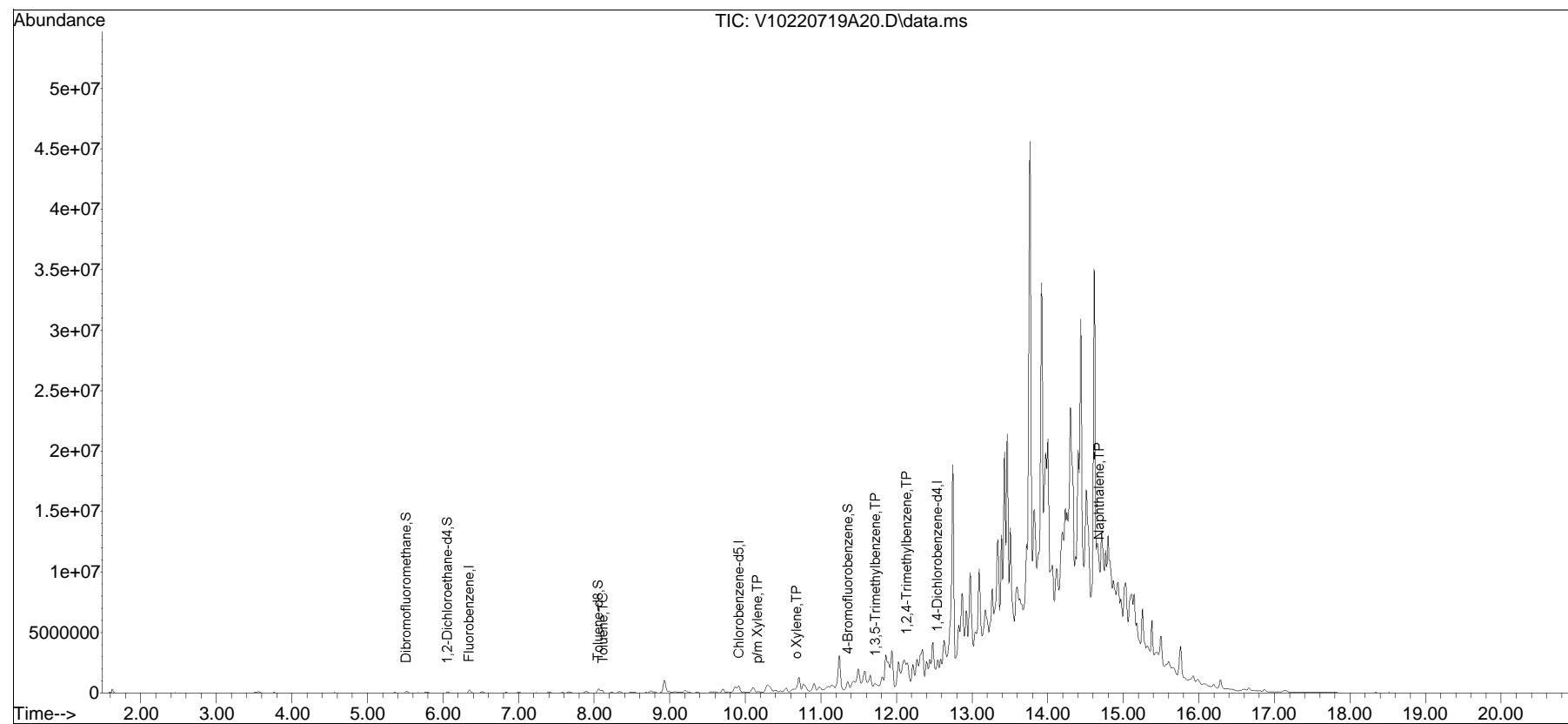
Page: 2

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2022\220719A\
Data File : V10220719A20.D
Acq On : 19 Jul 2022 5:43 pm
Operator : VOA110:AJK
Sample : 12238021-05,31,4.51,5,,b,r2f
Misc : WG1664964,ICAL18890
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Jul 19 18:10:44 2022
Quant Method : I:\VOLATILES\VOA110\2022\220719A\V110_220401N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Mon Apr 04 06:52:50 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list19A\V10220719A01.D•





ANALYTICAL REPORT

Lab Number:	L2238022
Client:	Ransom/Hilco 99 Summer St. Suite 1110 Boston, MA 02110
ATTN:	Joe Jeray
Phone:	(978) 729-3209
Project Name:	PHILADELPHIA REFINERY
Project Number:	200.00135.006
Report Date:	07/22/22

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2238022-01	PB-885-17-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:00	07/15/22
L2238022-02	PB-885-18-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:10	07/15/22
L2238022-03	PB-885-19-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:20	07/15/22
L2238022-04	PB-885-24-SS01	SOIL	PHILADELPHIA, PA	07/15/22 09:30	07/15/22
L2238022-05	PB-886-16-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:00	07/15/22
L2238022-06	PB-886-17-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:10	07/15/22
L2238022-07	PB-886-21-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:20	07/15/22
L2238022-08	PB-886-22-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:30	07/15/22
L2238022-09	PB-886-23-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:40	07/15/22
L2238022-10	PB-886-25-SS01	SOIL	PHILADELPHIA, PA	07/15/22 11:50	07/15/22
L2238022-11	DUP-45	SOIL	PHILADELPHIA, PA	07/15/22 00:00	07/15/22
L2238022-12	FB-071522-1	WATER	PHILADELPHIA, PA	07/15/22 14:00	07/15/22

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Case Narrative (continued)

Report Submission

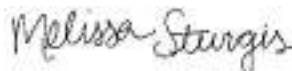
All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

The WG1664025-3 MS recovery, performed on L2238022-01, is outside the acceptance criteria for lead (54%). A post digestion spike was performed and yielded an unacceptable recovery for lead (53%). The serial dilution recovery was not applicable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 07/22/22

ORGANICS

VOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-01
 Client ID: PB-885-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 10:21
 Analyst: NLK
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	ND		mg/kg	0.00041	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00082	0.00021	1
Toluene	ND		mg/kg	0.00082	0.00044	1
1,2-Dibromoethane	ND		mg/kg	0.00041	0.00024	1
Ethylbenzene	ND		mg/kg	0.00082	0.00012	1
p/m-Xylene	ND		mg/kg	0.0016	0.00046	1
o-Xylene	ND		mg/kg	0.00082	0.00024	1
Xylenes, Total	ND		mg/kg	0.00082	0.00024	1
Isopropylbenzene	ND		mg/kg	0.00082	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-02
 Client ID: PB-885-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 10:52
 Analyst: NLK
 Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-03
 Client ID: PB-885-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 11:23
 Analyst: NLK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00049	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-04
 Client ID: PB-885-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 11:55
 Analyst: NLK
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0023	0.00023	1
Benzene	ND		mg/kg	0.00058	0.00019	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00030	1
Toluene	ND		mg/kg	0.0012	0.00063	1
1,2-Dibromoethane	ND		mg/kg	0.00058	0.00034	1
Ethylbenzene	ND		mg/kg	0.0012	0.00016	1
p/m-Xylene	ND		mg/kg	0.0023	0.00065	1
o-Xylene	ND		mg/kg	0.0012	0.00034	1
Xylenes, Total	ND		mg/kg	0.0012	0.00034	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0023	0.00022	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0023	0.00039	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-05
 Client ID: PB-886-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 12:28
 Analyst: NLK
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0017	0.00017	1
Benzene	ND		mg/kg	0.00043	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.00087	0.00022	1
Toluene	ND		mg/kg	0.00087	0.00047	1
1,2-Dibromoethane	ND		mg/kg	0.00043	0.00025	1
Ethylbenzene	ND		mg/kg	0.00087	0.00012	1
p/m-Xylene	ND		mg/kg	0.0017	0.00049	1
o-Xylene	ND		mg/kg	0.00087	0.00025	1
Xylenes, Total	ND		mg/kg	0.00087	0.00025	1
Isopropylbenzene	ND		mg/kg	0.00087	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0017	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0017	0.00029	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-06
 Client ID: PB-886-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 12:59
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00027	1
Toluene	ND		mg/kg	0.0010	0.00057	1
1,2-Dibromoethane	ND		mg/kg	0.00052	0.00031	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00058	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.00012	J	mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	0.00082	J	mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	0.0025		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-07
 Client ID: PB-886-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 13:30
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00044	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00089	0.00023	1
Toluene	ND		mg/kg	0.00089	0.00048	1
1,2-Dibromoethane	ND		mg/kg	0.00044	0.00026	1
Ethylbenzene	ND		mg/kg	0.00089	0.00012	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00089	0.00026	1
Xylenes, Total	ND		mg/kg	0.00089	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00089	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	94		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-08
 Client ID: PB-886-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 14:01
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	96		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-09
 Client ID: PB-886-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:40
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 14:34
 Analyst: AJK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	ND		mg/kg	0.00050	0.00017	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026	1
Toluene	ND		mg/kg	0.0010	0.00054	1
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029	1
Ethylbenzene	ND		mg/kg	0.0010	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00056	1
o-Xylene	ND		mg/kg	0.0010	0.00029	1
Xylenes, Total	ND		mg/kg	0.0010	0.00029	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-10
 Client ID: PB-886-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:50
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 15:06
 Analyst: AJK
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00018	1
Benzene	ND		mg/kg	0.00045	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00090	0.00023	1
Toluene	ND		mg/kg	0.00090	0.00049	1
1,2-Dibromoethane	ND		mg/kg	0.00045	0.00026	1
Ethylbenzene	ND		mg/kg	0.00090	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00050	1
o-Xylene	ND		mg/kg	0.00090	0.00026	1
Xylenes, Total	ND		mg/kg	0.00090	0.00026	1
Isopropylbenzene	ND		mg/kg	0.00090	0.00009	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00030	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	98		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-11
 Client ID: DUP-45
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260C
 Analytical Date: 07/19/22 15:37
 Analyst: AJK
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	ND		mg/kg	0.00046	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.00093	0.00024	1
Toluene	ND		mg/kg	0.00093	0.00050	1
1,2-Dibromoethane	ND		mg/kg	0.00046	0.00027	1
Ethylbenzene	ND		mg/kg	0.00093	0.00013	1
p/m-Xylene	ND		mg/kg	0.0018	0.00052	1
o-Xylene	ND		mg/kg	0.00093	0.00027	1
Xylenes, Total	ND		mg/kg	0.00093	0.00027	1
Isopropylbenzene	ND		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	97		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-12
 Client ID: FB-071522-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 14:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 07/20/22 16:10
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-12
 Client ID: FB-071522-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 14:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260C
 Analytical Date: 07/20/22 14:47
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	125		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	134	Q	70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 07/20/22 14:35
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 07/20/22 13:30

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 12 Batch: WG1664686-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260C
 Analytical Date: 07/19/22 09:51
 Analyst: MKS

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-11 Batch: WG1664964-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00026
Toluene	ND		mg/kg	0.0010	0.00054
1,2-Dibromoethane	ND		mg/kg	0.00050	0.00029
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	95		70-130

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260C
Analytical Date: 07/20/22 08:41
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 12 Batch: WG1665694-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	124		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238022

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 12 Batch: WG1664686-2									
1,2-Dibromoethane	93		-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-11 Batch: WG1664964-3 WG1664964-4								
Methyl tert butyl ether	122		119		66-130	2		30
Benzene	110		103		70-130	7		30
1,2-Dichloroethane	102		100		70-130	2		30
Toluene	108		103		70-130	5		30
1,2-Dibromoethane	109		109		70-130	0		30
Ethylbenzene	107		102		70-130	5		30
p/m-Xylene	109		103		70-130	6		30
o-Xylene	108		103		70-130	5		30
Isopropylbenzene	110		103		70-130	7		30
1,3,5-Trimethylbenzene	107		101		70-130	6		30
1,2,4-Trimethylbenzene	108		102		70-130	6		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		96		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	105		105		70-130
Dibromofluoromethane	93		92		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 12 Batch: WG1665694-3 WG1665694-4								
Methyl tert butyl ether	87		94		63-130	8		20
Benzene	110		110		70-130	0		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	99		100		70-130	1		20
Ethylbenzene	100		100		70-130	0		20
p/m-Xylene	105		105		70-130	0		20
o-Xylene	100		100		70-130	0		20
Isopropylbenzene	91		92		70-130	1		20
1,3,5-Trimethylbenzene	94		95		64-130	1		20
1,2,4-Trimethylbenzene	93		94		70-130	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	87		87		70-130
Dibromofluoromethane	110		110		70-130



SEMIVOLATILES

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-01
 Client ID: PB-885-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:21
 Analyst: IM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	72		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-02
 Client ID: PB-885-18-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 15:45
 Analyst: IM
 Percent Solids: 93%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.021	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.10	0.021	1
Anthracene	ND		mg/kg	0.10	0.034	1
Pyrene	ND		mg/kg	0.10	0.017	1
Benzo(a)anthracene	ND		mg/kg	0.10	0.020	1
Chrysene	ND		mg/kg	0.10	0.018	1
Benzo(b)fluoranthene	ND		mg/kg	0.10	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.043	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	69		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-03
 Client ID: PB-885-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 16:10
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	79		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-04
 Client ID: PB-885-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:00
 Analyst: IM
 Percent Solids: 89%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	78		30-120
4-Terphenyl-d14	87		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-05
 Client ID: PB-886-16-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:24
 Analyst: IM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.017	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.035	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.020	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.030	1
Benzo(a)pyrene	ND		mg/kg	0.14	0.044	1
Benzo(ghi)perylene	ND		mg/kg	0.14	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	74		30-120
4-Terphenyl-d14	86		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-06
 Client ID: PB-886-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:48
 Analyst: IM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.092	J	mg/kg	0.19	0.023	1
Fluorene	0.046	J	mg/kg	0.19	0.019	1
Phenanthrene	0.13		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.038	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	84		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-07
 Client ID: PB-886-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 20:12
 Analyst: IM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.019	1
Phenanthrene	ND		mg/kg	0.12	0.023	1
Anthracene	ND		mg/kg	0.12	0.037	1
Pyrene	ND		mg/kg	0.12	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.12	0.022	1
Chrysene	ND		mg/kg	0.12	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.12	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.047	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	77		30-120
4-Terphenyl-d14	86		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-08
 Client ID: PB-886-22-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 20:37
 Analyst: IM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 21:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.023	1
Fluorene	ND		mg/kg	0.19	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.023	1
Anthracene	ND		mg/kg	0.11	0.037	1
Pyrene	ND		mg/kg	0.11	0.019	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.020	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.032	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.046	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	82		18-120

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-09
 Client ID: PB-886-23-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:40
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:01
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 23:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.023	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	49		30-120
4-Terphenyl-d14	60		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-10
 Client ID: PB-886-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:50
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:25
 Analyst: IM
 Percent Solids: 88%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 23:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	103		23-120
2-Fluorobiphenyl	56		30-120
4-Terphenyl-d14	64		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-11
 Client ID: DUP-45
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270D
 Analytical Date: 07/18/22 19:48
 Analyst: IM
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 07/16/22 23:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.18	0.022	1
Fluorene	ND		mg/kg	0.18	0.018	1
Phenanthrene	ND		mg/kg	0.11	0.022	1
Anthracene	ND		mg/kg	0.11	0.036	1
Pyrene	ND		mg/kg	0.11	0.018	1
Benzo(a)anthracene	ND		mg/kg	0.11	0.021	1
Chrysene	ND		mg/kg	0.11	0.019	1
Benzo(b)fluoranthene	ND		mg/kg	0.11	0.031	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1
Benzo(ghi)perylene	ND		mg/kg	0.15	0.022	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	108		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	77		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-12
 Client ID: FB-071522-1
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 14:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270D-SIM
 Analytical Date: 07/17/22 19:44
 Analyst: RP

Extraction Method: EPA 3510C
 Extraction Date: 07/16/22 08:39

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	26		23-120
2-Fluorobiphenyl	28		15-120
4-Terphenyl-d14	34	Q	41-149

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D-SIM
Analytical Date: 07/17/22 16:33
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 07/16/22 08:39

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 12 Batch: WG1663655-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	38		23-120
2-Fluorobiphenyl	41		15-120
4-Terphenyl-d14	49		41-149



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/18/22 11:42
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 07/16/22 21:27

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-08 Batch: WG1663763-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.098	0.020
Anthracene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.016
Benzo(a)anthracene	ND		mg/kg	0.098	0.018
Chrysene	ND		mg/kg	0.098	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.098	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	75		30-120
4-Terphenyl-d14	88		18-120



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270D
Analytical Date: 07/18/22 16:15
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 07/16/22 23:15

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 09-11 Batch: WG1663766-1					
Naphthalene	ND		mg/kg	0.16	0.020
Fluorene	ND		mg/kg	0.16	0.016
Phenanthrene	ND		mg/kg	0.099	0.020
Anthracene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.016
Benzo(a)anthracene	ND		mg/kg	0.099	0.019
Chrysene	ND		mg/kg	0.099	0.017
Benzo(b)fluoranthene	ND		mg/kg	0.099	0.028
Benzo(a)pyrene	ND		mg/kg	0.13	0.040
Benzo(ghi)perylene	ND		mg/kg	0.13	0.019

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	119		23-120
2-Fluorobiphenyl	64		30-120
4-Terphenyl-d14	81		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 12 Batch: WG1663655-2 WG1663655-3								
Naphthalene	80		69		40-140	15		40
Fluorene	83		73		40-140	13		40
Phenanthrene	84		73		40-140	14		40
Anthracene	85		74		40-140	14		40
Pyrene	92		80		26-127	14		40
Benzo(a)anthracene	84		73		40-140	14		40
Chrysene	87		78		40-140	11		40
Benzo(b)fluoranthene	88		85		40-140	3		40
Benzo(a)pyrene	87		76		40-140	13		40
Benzo(ghi)perylene	97		85		40-140	13		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	40		35		23-120
2-Fluorobiphenyl	42		37		15-120
4-Terphenyl-d14	47		42		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-08 Batch: WG1663763-2 WG1663763-3								
Naphthalene	68		62		40-140	9		50
Fluorene	71		64		40-140	10		50
Phenanthrene	66		62		40-140	6		50
Anthracene	69		65		40-140	6		50
Pyrene	74		62		35-142	18		50
Benzo(a)anthracene	71		66		40-140	7		50
Chrysene	71		66		40-140	7		50
Benzo(b)fluoranthene	74		67		40-140	10		50
Benzo(a)pyrene	78		62		40-140	23		50
Benzo(ghi)perylene	66		65		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	76		70		23-120
2-Fluorobiphenyl	71		65		30-120
4-Terphenyl-d14	80		66		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238022

Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 09-11 Batch: WG1663766-2 WG1663766-3								
Naphthalene	66		56		40-140	16		50
Fluorene	69		61		40-140	12		50
Phenanthrene	68		61		40-140	11		50
Anthracene	70		64		40-140	9		50
Pyrene	67		68		35-142	1		50
Benzo(a)anthracene	69		63		40-140	9		50
Chrysene	68		61		40-140	11		50
Benzo(b)fluoranthene	70		62		40-140	12		50
Benzo(a)pyrene	70		63		40-140	11		50
Benzo(ghi)perylene	69		62		40-140	11		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	99		98		23-120
2-Fluorobiphenyl	64		56		30-120
4-Terphenyl-d14	71		79		18-120

METALS



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-01

Date Collected: 07/15/22 09:00

Client ID: PB-885-17-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.53	J	mg/kg	2.21	0.118	1	07/18/22 08:55	07/21/22 08:31	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-02

Date Collected: 07/15/22 09:10

Client ID: PB-885-18-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.49	J	mg/kg	2.06	0.110	1	07/18/22 08:55	07/21/22 09:50	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-03
 Client ID: PB-885-19-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.93	J	mg/kg	2.13	0.114	1	07/18/22 08:55	07/21/22 09:54	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-04
 Client ID: PB-885-24-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:30
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.63	J	mg/kg	2.16	0.116	1	07/18/22 08:55	07/21/22 09:59	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-05

Date Collected: 07/15/22 11:00

Client ID: PB-886-16-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.82	J	mg/kg	2.13	0.114	1	07/18/22 08:55	07/21/22 10:04	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-06
 Client ID: PB-886-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.80	J	mg/kg	2.27	0.122	1	07/18/22 08:55	07/21/22 10:09	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238022-07

Date Collected: 07/15/22 11:20

Client ID: PB-886-21-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.82	J	mg/kg	2.23	0.120	1	07/18/22 08:55	07/21/22 10:14	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-08

Date Collected: 07/15/22 11:30

Client ID: PB-886-22-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.06	J	mg/kg	2.24	0.120	1	07/18/22 08:55	07/21/22 10:51	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-09

Date Collected: 07/15/22 11:40

Client ID: PB-886-23-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.95	J	mg/kg	2.21	0.118	1	07/18/22 08:55	07/21/22 10:56	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-10
 Client ID: PB-886-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:50
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	1.81	J	mg/kg	2.18	0.117	1	07/18/22 08:55	07/21/22 11:01	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-11
 Client ID: DUP-45
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 00:00
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	2.24		mg/kg	2.16	0.116	1	07/18/22 08:55	07/21/22 11:06	EPA 3050B	1,6010D	SB



Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**SAMPLE RESULTS**

Lab ID: L2238022-12

Date Collected: 07/15/22 14:00

Client ID: FB-071522-1

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	ND		ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 21:02	EPA 3005A	1,6020B	SV



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-11 Batch: WG1664025-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	07/18/22 08:55	07/21/22 08:08	1,6010D	SB

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 12 Batch: WG1664131-1									
Lead, Total	ND	ug/l	1.000	0.3430	1	07/18/22 13:42	07/19/22 18:48	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 Batch: WG1664025-2 SRM Lot Number: D113-540								
Lead, Total	93		-		72-128	-		
Total Metals - Mansfield Lab Associated sample(s): 12 Batch: WG1664131-2								
Lead, Total	104		-		80-120	-		



Matrix Spike Analysis Batch Quality Control

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1664025-3 QC Sample: L2238022-01 Client ID: PB-885-17-SS01												
Lead, Total	1.53J	47.1	25.4	54	Q	-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1664131-3 QC Sample: L2237200-07 Client ID: MS Sample												
Lead, Total	ND	530	528.2	100		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238022

Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-11 QC Batch ID: WG1664025-4 QC Sample: L2238022-01 Client ID: PB-885-17-SS01						
Lead, Total	1.53J	1.44J	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 12 QC Batch ID: WG1664131-4 QC Sample: L2237200-07 Client ID: DUP Sample						
Lead, Total	ND	ND	ug/l	NC		20

INORGANICS & MISCELLANEOUS

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-01

Date Collected: 07/15/22 09:00

Client ID: PB-885-17-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.1		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-02
Client ID: PB-885-18-SS01
Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 09:10
Date Received: 07/15/22
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.2		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-03

Date Collected: 07/15/22 09:20

Client ID: PB-885-19-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.2		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-04

Date Collected: 07/15/22 09:30

Client ID: PB-885-24-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.7		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-05

Date Collected: 07/15/22 11:00

Client ID: PB-886-16-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.0		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-06
 Client ID: PB-886-17-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:10
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-07
 Client ID: PB-886-21-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:20
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.9		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-08

Date Collected: 07/15/22 11:30

Client ID: PB-886-22-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-09

Date Collected: 07/15/22 11:40

Client ID: PB-886-23-SS01

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.6		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-10
 Client ID: PB-886-25-SS01
 Sample Location: PHILADELPHIA, PA

Date Collected: 07/15/22 11:50
 Date Received: 07/15/22
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.1		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

Project Number: 200.00135.006

Report Date: 07/22/22

SAMPLE RESULTS

Lab ID: L2238022-11

Date Collected: 07/15/22 00:00

Client ID: DUP-45

Date Received: 07/15/22

Sample Location: PHILADELPHIA, PA

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	07/16/22 12:03	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: PHILADELPHIA REFINERY

Project Number: 200.00135.006

Lab Number: L2238022

Report Date: 07/22/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-11 QC Batch ID: WG1663682-1 QC Sample: L2238022-01 Client ID: PB-885-17-SS01						
Solids, Total	87.1	89.0	%	2		20

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent
C	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238022-01A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-01B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-01C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-01D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-01E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-01F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-02A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-02B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-02C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-02D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-02E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-02F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-03A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-03B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-03C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-03D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-03E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-03F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-04A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-04B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-04C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238022-04D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-04E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-04F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-05A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2238022-05B	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-05C	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:24	PA-8260HLW(14)
L2238022-05D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2238022-05E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2238022-05F	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		PA-PAH(14)
L2238022-06A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2238022-06B	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-06C	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-06D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2238022-06E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2238022-06F	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		PA-PAH(14)
L2238022-07A	Vial MeOH preserved	A	NA		2.7	Y	Absent		PA-8260HLW(14)
L2238022-07B	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-07C	Vial water preserved	A	NA		2.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-07D	Plastic 2oz unpreserved for TS	A	NA		2.7	Y	Absent		TS(7)
L2238022-07E	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.7	Y	Absent		PB-TI(180)
L2238022-07F	Glass 120ml/4oz unpreserved	A	NA		2.7	Y	Absent		PA-PAH(14)
L2238022-08A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-08B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-08C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-08D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-08E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-08F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-09A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)

Project Name: PHILADELPHIA REFINERY**Lab Number:** L2238022**Project Number:** 200.00135.006**Report Date:** 07/22/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2238022-09B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-09C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-09D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-09E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-09F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-10A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-10B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-10C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-10D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-10E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-10F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-11A	Vial MeOH preserved	B	NA		3.7	Y	Absent		PA-8260HLW(14)
L2238022-11B	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-11C	Vial water preserved	B	NA		3.7	Y	Absent	16-JUL-22 08:27	PA-8260HLW(14)
L2238022-11D	Plastic 2oz unpreserved for TS	B	NA		3.7	Y	Absent		TS(7)
L2238022-11E	Metals Only-Glass 60mL/2oz unpreserved	B	NA		3.7	Y	Absent		PB-TI(180)
L2238022-11F	Glass 120ml/4oz unpreserved	B	NA		3.7	Y	Absent		PA-PAH(14)
L2238022-12A	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238022-12B	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238022-12C	Vial HCl preserved	A	NA		2.7	Y	Absent		PA-8260(14)
L2238022-12D	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238022-12E	Vial Na2S2O3 preserved	A	NA		2.7	Y	Absent		8011(14)
L2238022-12F	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238022-12G	Amber 250ml unpreserved	A	7	7	2.7	Y	Absent		PA-PAHSIM-LVI(7)
L2238022-12H	Plastic 250ml HNO3 preserved	A	<2	<2	2.7	Y	Absent		PB-6020T-PPB(180)

Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: PHILADELPHIA REFINERY
Project Number: 200.00135.006

Lab Number: L2238022
Report Date: 07/22/22

Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: PHILADELPHIA REFINERY

Lab Number: L2238022

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Report Date: 07/22/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

PADEP Short List Analytical Suites per Table III-5:

1. Leaded Gasoline, Aviation Gasoline and Jet Fuel - benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, lead
2. Unleaded Gasoline - benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
3. Kerosene, Fuel Oil No. 1 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene
4. Diesel Fuel and Fuel Oil No. 2 - benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethyl benzene
5. Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids - benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(g,h,i)perylene



ANALYTICAL REPORT

Lab Number:	L2271577
Client:	Terraphase Engineering Inc. 100 Canal Pointe Boulevard Suite 108 Princeton, NJ 08540
ATTN:	Nick Scala
Phone:	(609) 236-8171
Project Name:	FORMER PHILADELPHIA REFINERY
Project Number:	P044.001.002
Report Date:	12/28/22

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2271577-01	TG04-MW-02-7.0-7.5	SOIL	AST CLOSURE	12/19/22 12:57	12/20/22
L2271577-02	TG04-MW-02-23.5-24.0	SOIL	AST CLOSURE	12/19/22 14:32	12/20/22
L2271577-03	TG04-MW-01-10.0-10.5	SOIL	AST CLOSURE	12/20/22 09:25	12/20/22
L2271577-04	TG04-MW-01-13.0-13.5	SOIL	AST CLOSURE	12/20/22 09:35	12/20/22
L2271577-05	TB-221220-1	WATER	AST CLOSURE	12/19/22 00:00	12/20/22

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Case Narrative (continued)

Report Submission

December 28, 2022: This final report includes the results of all requested analyses.

December 28, 2022: This is a preliminary report.

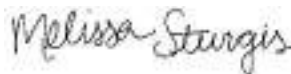
All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2271577-01: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (144%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 12/28/22

ORGANICS

VOLATILES

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

SAMPLE RESULTS

Lab ID: L2271577-01
 Client ID: TG04-MW-02-7.0-7.5
 Sample Location: AST CLOSURE

Date Collected: 12/19/22 12:57
 Date Received: 12/20/22
 Field Prep: None

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 12/27/22 23:59
 Analyst: NLK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	0.00026	J	mg/kg	0.0022	0.00022	1
Benzene	0.0023		mg/kg	0.00056	0.00018	1
Ethylbenzene	0.028		mg/kg	0.0011	0.00016	1
p/m-Xylene	0.0018	J	mg/kg	0.0022	0.00062	1
o-Xylene	0.00088	J	mg/kg	0.0011	0.00032	1
Xylenes, Total	0.0027	J	mg/kg	0.0011	0.00032	1
Isopropylbenzene	0.015		mg/kg	0.0011	0.00012	1
1,3,5-Trimethylbenzene	0.0059		mg/kg	0.0022	0.00021	1
1,2,4-Trimethylbenzene	0.0016	J	mg/kg	0.0022	0.00037	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	144	Q	70-130
Dibromofluoromethane	89		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

SAMPLE RESULTS

Lab ID: L2271577-03
 Client ID: TG04-MW-01-10.0-10.5
 Sample Location: AST CLOSURE

Date Collected: 12/20/22 09:25
 Date Received: 12/20/22
 Field Prep: None

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 12/22/22 13:33
 Analyst: NLK
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00021	1
Benzene	ND		mg/kg	0.00052	0.00017	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
p/m-Xylene	ND		mg/kg	0.0021	0.00059	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	ND		mg/kg	0.0010	0.00030	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0021	0.00020	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0021	0.00035	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	92		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

SAMPLE RESULTS

Lab ID: L2271577-05
 Client ID: TB-221220-1
 Sample Location: AST CLOSURE

Date Collected: 12/19/22 00:00
 Date Received: 12/20/22
 Field Prep: None

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 12/21/22 11:30
 Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	125		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 12/21/22 11:10
Analyst: PID

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1726471-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	114		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	117		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 12/22/22 09:41
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 03 Batch: WG1727109-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	91		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 12/27/22 20:03
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01 Batch: WG1727950-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1726471-3 WG1726471-4								
Methyl tert butyl ether	80		82		63-130	2		20
Benzene	97		100		70-130	3		20
Ethylbenzene	99		100		70-130	1		20
p/m-Xylene	100		105		70-130	5		20
o-Xylene	105		105		70-130	0		20
Isopropylbenzene	96		97		70-130	1		20
1,3,5-Trimethylbenzene	94		97		64-130	3		20
1,2,4-Trimethylbenzene	94		97		70-130	3		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	101		103		70-130
Toluene-d8	95		97		70-130
4-Bromofluorobenzene	87		88		70-130
Dibromofluoromethane	115		117		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 03 Batch: WG1727109-3 WG1727109-4								
Methyl tert butyl ether	101		95		66-130	6		30
Benzene	104		96		70-130	8		30
Ethylbenzene	106		99		70-130	7		30
p/m-Xylene	108		100		70-130	8		30
o-Xylene	106		98		70-130	8		30
Isopropylbenzene	105		98		70-130	7		30
1,3,5-Trimethylbenzene	105		98		70-130	7		30
1,2,4-Trimethylbenzene	104		98		70-130	6		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		97		70-130
Toluene-d8	102		103		70-130
4-Bromofluorobenzene	97		98		70-130
Dibromofluoromethane	94		93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01 Batch: WG1727950-3 WG1727950-4								
Methyl tert butyl ether	107		110		66-130	3		30
Benzene	113		114		70-130	1		30
Ethylbenzene	117		118		70-130	1		30
p/m-Xylene	104		105		70-130	1		30
o-Xylene	101		103		70-130	2		30
Isopropylbenzene	104		104		70-130	0		30
1,3,5-Trimethylbenzene	114		114		70-130	0		30
1,2,4-Trimethylbenzene	115		114		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		96		70-130
Toluene-d8	102		101		70-130
4-Bromofluorobenzene	108		108		70-130
Dibromofluoromethane	94		95		70-130

SEMIVOLATILES

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

SAMPLE RESULTS

Lab ID: L2271577-01
 Client ID: TG04-MW-02-7.0-7.5
 Sample Location: AST CLOSURE

Date Collected: 12/19/22 12:57
 Date Received: 12/20/22
 Field Prep: None

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 12/22/22 13:22
 Analyst: MG
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/22/22 01:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.20	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	70		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

SAMPLE RESULTS

Lab ID: L2271577-03
 Client ID: TG04-MW-01-10.0-10.5
 Sample Location: AST CLOSURE

Date Collected: 12/20/22 09:25
 Date Received: 12/20/22
 Field Prep: None

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 12/22/22 13:46
 Analyst: MG
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 12/22/22 01:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.024	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	76		30-120
4-Terphenyl-d14	66		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E
Analytical Date: 12/22/22 08:57
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 12/22/22 01:47

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1726370-1					
Naphthalene	ND		mg/kg	0.16	0.020

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	71		25-120
Phenol-d6	69		10-120
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	67		30-120
2,4,6-Tribromophenol	65		10-136
4-Terphenyl-d14	68		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1726370-2 WG1726370-3								
Naphthalene	70		72		40-140	3		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	76		78		25-120
Phenol-d6	75		76		10-120
Nitrobenzene-d5	72		73		23-120
2-Fluorobiphenyl	71		73		30-120
2,4,6-Tribromophenol	80		78		10-136
4-Terphenyl-d14	72		75		18-120

METALS



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

SAMPLE RESULTS

Lab ID: L2271577-01
 Client ID: TG04-MW-02-7.0-7.5
 Sample Location: AST CLOSURE

Date Collected: 12/19/22 12:57
 Date Received: 12/20/22
 Field Prep: None

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	7.50		mg/kg	2.25	0.120	1	12/21/22 14:57	12/21/22 20:20	EPA 3050B	1,6010D	DHL



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

SAMPLE RESULTS

Lab ID: L2271577-03
 Client ID: TG04-MW-01-10.0-10.5
 Sample Location: AST CLOSURE

Date Collected: 12/20/22 09:25
 Date Received: 12/20/22
 Field Prep: None

Sample Depth:
 Matrix: Soil
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	9.99		mg/kg	2.27	0.122	1	12/21/22 14:57	12/21/22 20:25	EPA 3050B	1,6010D	DHL



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1726072-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	12/21/22 14:57	12/21/22 20:05	1,6010D	DHL

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1726072-2 SRM Lot Number: D116-540								
Lead, Total	99		-		83-117	-		



Matrix Spike Analysis
Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1726072-3 QC Sample: L2271544-01 Client ID: MS Sample												
Lead, Total	12.1	54.8	61.1	89		-	-		75-125	-		20



Lab Duplicate Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1726072-4 QC Sample: L2271544-01 Client ID: DUP Sample						
Lead, Total	12.1	13.1	mg/kg	8		20

INORGANICS & MISCELLANEOUS

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

SAMPLE RESULTS

Lab ID: L2271577-01
Client ID: TG04-MW-02-7.0-7.5
Sample Location: AST CLOSURE

Date Collected: 12/19/22 12:57
Date Received: 12/20/22
Field Prep: None

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.7		%	0.100	NA	1	-	12/21/22 09:49	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

SAMPLE RESULTS

Lab ID: L2271577-03
 Client ID: TG04-MW-01-10.0-10.5
 Sample Location: AST CLOSURE

Date Collected: 12/20/22 09:25
 Date Received: 12/20/22
 Field Prep: None

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	12/21/22 09:49	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03 QC Batch ID: WG1726000-1 QC Sample: L2271536-01 Client ID: DUP Sample						
Solids, Total	86.4	85.5	%	1		20

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2271577**Project Number:** P044.001.002**Report Date:** 12/28/22**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2271577-01A	5 gram Encore Sampler	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2271577-01B	5 gram Encore Sampler	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2271577-01C	5 gram Encore Sampler	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2271577-01D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		PB-TI(180)
L2271577-01E	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)
L2271577-01X	Vial MeOH preserved split	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2271577-01Y	Vial Water preserved split	A	NA		4.0	Y	Absent	21-DEC-22 10:51	PA-8260HLW(14)
L2271577-01Z	Vial Water preserved split	A	NA		4.0	Y	Absent	21-DEC-22 10:51	PA-8260HLW(14)
L2271577-02A	5 gram Encore Sampler	A	NA		4.0	Y	Absent		HOLD-8260HLW(14)
L2271577-02B	5 gram Encore Sampler	A	NA		4.0	Y	Absent		HOLD-8260HLW(14)
L2271577-02C	5 gram Encore Sampler	A	NA		4.0	Y	Absent		HOLD-8260HLW(14)
L2271577-02D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		HOLD-METAL(180)
L2271577-02E	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		HOLD-WETCHEM(),HOLD-8270(14)
L2271577-02X	Vial MeOH preserved split	A	NA		4.0	Y	Absent		HOLD-8260HLW(14)
L2271577-02Y	Vial Water preserved split	A	NA		4.0	Y	Absent	21-DEC-22 10:51	HOLD-8260HLW(14)
L2271577-02Z	Vial Water preserved split	A	NA		4.0	Y	Absent	21-DEC-22 10:51	HOLD-8260HLW(14)
L2271577-03A	5 gram Encore Sampler	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2271577-03B	5 gram Encore Sampler	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2271577-03C	5 gram Encore Sampler	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2271577-03D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		PB-TI(180)
L2271577-03E	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		TS(7),PA-PAH(14)
L2271577-03X	Vial MeOH preserved split	A	NA		4.0	Y	Absent		PA-8260HLW(14)
L2271577-03Y	Vial Water preserved split	A	NA		4.0	Y	Absent	21-DEC-22 10:51	PA-8260HLW(14)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2271577**Project Number:** P044.001.002**Report Date:** 12/28/22**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2271577-03Z	Vial Water preserved split	A	NA		4.0	Y	Absent	21-DEC-22 10:51	PA-8260HLW(14)
L2271577-04A	5 gram Encore Sampler	A	NA		4.0	Y	Absent		HOLD-8260HLW(14)
L2271577-04B	5 gram Encore Sampler	A	NA		4.0	Y	Absent		HOLD-8260HLW(14)
L2271577-04C	5 gram Encore Sampler	A	NA		4.0	Y	Absent		HOLD-8260HLW(14)
L2271577-04D	Plastic 2oz unpreserved for TS	A	NA		4.0	Y	Absent		HOLD-METAL(180)
L2271577-04E	Glass 120ml/4oz unpreserved	A	NA		4.0	Y	Absent		HOLD-WETCHEM(),HOLD-8270(14)
L2271577-04X	Vial MeOH preserved split	A	NA		4.0	Y	Absent		HOLD-8260HLW(14)
L2271577-04Y	Vial Water preserved split	A	NA		4.0	Y	Absent	21-DEC-22 10:51	HOLD-8260HLW(14)
L2271577-04Z	Vial Water preserved split	A	NA		4.0	Y	Absent	21-DEC-22 10:51	HOLD-8260HLW(14)
L2271577-05A	Vial HCl preserved	A	NA		4.0	Y	Absent		PA-8260(14)
L2271577-05B	Vial HCl preserved	A	NA		4.0	Y	Absent		PA-8260(14)

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: FORMER PHILADELPHIA REFINERY
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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2271577
Report Date: 12/28/22

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE _____ OF _____

WESTBORO, MA
TEL: 508-898-9220
FAX: 508-898-9193

MANSFIELD, MA
TEL: 508-822-9300
FAX: 508-822-3288

Date Rec'd in Lab: 12/21/22

ALPHA Job #: L2271577

Project Information

Project Name: Former Philadelphia Refinery
Project Location: APT closure

Report Information - Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #:

Client Information

Client: TerraPhase Engineering
Address: 1100 E Hector St
Conshohocken, PA 19428
Phone: 215-297-3502
Fax:
Email: nick.scalo@terraphase.com

Project #: 2044.001.002

Project Manager: Nick Scalo

ALPHA Quote #:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved)
Date Due: Time:

Regulatory Requirements/Report Limits

State/Fed Program Criteria

Other Project Specific Requirements/Comments/Detection Limits:
EOD@terraphase.com; Equis Forensic CDD
Use volume from SWOC sur to analyze for lead

ANALYSIS
 8200 - Benzene, Cumene, Ethyl Benzene, Methyl Ethyl Benzene, 1,5-DIMB, 1,3,5-TMB, Xylene (ortho)
 8220 - In Petroleum
 6010 - Lead

SAMPLE HANDLING
 Filtration _____
 Done
 Not needed
 Lab to do
 Preservation
 Lab to do
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS			Sample Specific Comments
		Date	Time			8200	8220	6010	
71577-01	T604-MW-02-7.0-7.5	12/19/22	1257	50	SMM	X	X	X	Analyze
-02	T604-MW-02-23.5-24.0	12/19/22	1432	50	SMM	H	H	H	Hold
-03	T604-MW-01-10.0-10.5	12/20/22	925	50	SMM	X	X	X	Analyze
-04	T604-MW-01-13.0-13.5	12/20/22	935	50	SMM	H	H	H	Hold
-05	TB-221220-1	12/20/22	1049	TB	SMM	X			Analyze

Container Type _____
Preservative _____

Relinquished By: [Signature]	Date/Time: 12/20/22 1425	Received By: [Signature]	Date/Time: 12/20/22 1445
[Signature]	12/20/22 1800	[Signature]	12/20/22 1800
[Signature]	12/20/22 2100	[Signature]	12-20-22 2100

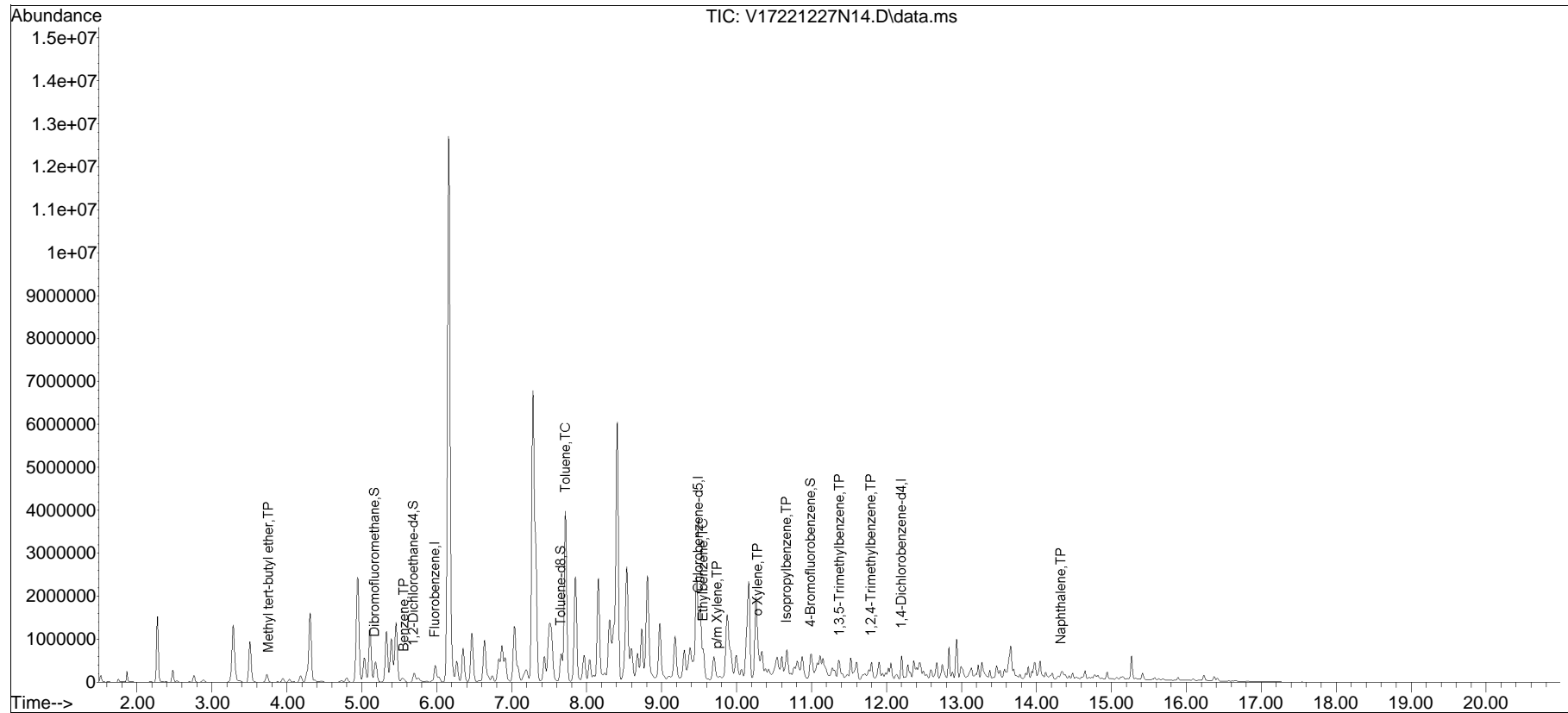
Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA117\2022\221227N\
Data File : V17221227N14.D
Acq On : 27 Dec 2022 11:59 pm
Operator : VOA117:NLK
Sample : 12271577-01,31,5.38,5,,z,r2f
Misc : WG1727950,ICAL19514
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Dec 28 07:30:13 2022
Quant Method : I:\VOLATILES\VOA117\2022\221227N\V117_221121N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Nov 22 14:12:03 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list27N\V17221227N01.D•





ANALYTICAL REPORT

Lab Number:	L2300364
Client:	Terraphase Engineering Inc. 1100 East Hector Street Suite 416 Conshohocken, PA 19428
ATTN:	Nick Scala
Phone:	(215) 297-3502
Project Name:	FORMER PHILADELPHIA REFINERY
Project Number:	P044.001.002
Report Date:	01/06/23

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2300364-01	TG04-MW-03-230104	WATER	3144 W PASSYUNK AVE.	01/04/23 09:40	01/04/23
L2300364-02	TG04-MW-03-230104D	WATER	3144 W PASSYUNK AVE.	01/04/23 09:40	01/04/23
L2300364-03	TG07-MW-02-230104	WATER	3144 W PASSYUNK AVE.	01/04/23 13:20	01/04/23
L2300364-04	TB-230104-2	WATER	3144 W PASSYUNK AVE.	01/04/23 00:00	01/04/23
L2300364-05	FB-230104-2	WATER	3144 W PASSYUNK AVE.	01/04/23 11:10	01/04/23
L2300364-06	TG07-MW-03-230104	WATER	3144 W PASSYUNK AVE.	01/04/23 14:05	01/04/23

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The analyses performed were specified by the client.

Volatile Organics

L2300364-03 and WG1730461-6/-7: The pH was greater than two; however, the sample was analyzed within the method required holding time.

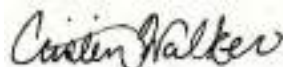
Microextractables

The WG1730299-2 LCS recovery for 1,2-dibromoethane (130%), associated with L2300364-01 through -06, is outside Alpha's acceptance criteria, but within the acceptance criteria specified in the method.

The WG1730299-4 MSD recovery for 1,2-dibromoethane (125%), performed on L2300364-03, is outside Alpha's acceptance criteria, but within the acceptance criteria specified in the method.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Cristin Walker

Title: Technical Director/Representative

Date: 01/06/23

ORGANICS

VOLATILES

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-01
 Client ID: TG04-MW-03-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 09:40
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/05/23 12:32
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/05/23 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-01
 Client ID: TG04-MW-03-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 09:40
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 11:27
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	98		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-02
 Client ID: TG04-MW-03-230104D
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 09:40
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/05/23 12:40
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/05/23 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-02
 Client ID: TG04-MW-03-230104D
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 09:40
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 11:53
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-03
 Client ID: TG07-MW-02-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 13:20
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/05/23 12:49
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/05/23 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-03
 Client ID: TG07-MW-02-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 13:20
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 12:18
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	0.36	J	ug/l	1.0	0.17	1
Benzene	17		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	1.4		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	0.42	J	ug/l	0.50	0.17	1
p/m-Xylene	0.73	J	ug/l	1.0	0.33	1
o-Xylene	0.80	J	ug/l	1.0	0.39	1
Xylenes, Total	1.5	J	ug/l	1.0	0.33	1
Isopropylbenzene	67		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	0.24	J	ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	0.50	J	ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	94		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-04
 Client ID: TB-230104-2
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 00:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/05/23 12:57
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/05/23 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-04
 Client ID: TB-230104-2
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 00:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 10:35
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	98		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-05
 Client ID: FB-230104-2
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 11:10
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/05/23 13:05
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/05/23 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-05
 Client ID: FB-230104-2
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 11:10
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 11:01
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	98		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-06
 Client ID: TG07-MW-03-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 14:05
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/05/23 13:13
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/05/23 10:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-06
 Client ID: TG07-MW-03-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 14:05
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 12:45
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	0.36	J	ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	0.23	J	ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	0.67	J	ug/l	1.0	0.33	1
o-Xylene	0.55	J	ug/l	1.0	0.39	1
Xylenes, Total	1.2	J	ug/l	1.0	0.33	1
Isopropylbenzene	4.0		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	3.4		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	95		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 01/05/23 11:42
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 01/05/23 10:44

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 01-06 Batch: WG1730299-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/05/23 09:43
Analyst: PID

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-06 Batch: WG1730461-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
1,2-Dibromoethane	ND		ug/l	2.0	0.19
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	97		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 01-06 Batch: WG1730299-2									
1,2-Dibromoethane	130	Q	-		80-120	-		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-06 Batch: WG1730461-3 WG1730461-4								
Methyl tert butyl ether	97		95		63-130	2		20
Benzene	110		110		70-130	0		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	110		100		70-130	10		20
1,2-Dibromoethane	100		100		70-130	0		20
Ethylbenzene	110		100		70-130	10		20
p/m-Xylene	110		105		70-130	5		20
o-Xylene	105		105		70-130	0		20
Isopropylbenzene	110		110		70-130	0		20
1,3,5-Trimethylbenzene	110		110		64-130	0		20
1,2,4-Trimethylbenzene	110		100		70-130	10		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		98		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	96		96		70-130
Dibromofluoromethane	98		96		70-130

Matrix Spike Analysis Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab TG07-MW-02-230104 Associated sample(s): 01-06 QC Batch ID: WG1730299-3 WG1730299-4 QC Sample: L2300364-03 Client ID:													
1,2-Dibromoethane	ND	0.247	0.276	112		0.314	125	Q	80-120	13		20	A



Matrix Spike Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1730461-6 WG1730461-7 QC Sample: L2300364-03 Client ID: TG07-MW-02-230104												
Methyl tert butyl ether	0.36J	10	9.7	97		9.8	98		63-130	1		20
Benzene	17	10	27	100		27	100		70-130	0		20
1,2-Dichloroethane	ND	10	10	100		10	100		70-130	0		20
Toluene	1.4	10	12	106		12	106		70-130	0		20
1,2-Dibromoethane	ND	10	10	100		10	100		70-130	0		20
Ethylbenzene	0.42J	10	11	110		11	110		70-130	0		20
p/m-Xylene	0.73J	20	22	110		22	110		70-130	0		20
o-Xylene	0.80J	20	22	110		22	110		70-130	0		20
Isopropylbenzene	67	10	72	50	Q	72	50	Q	70-130	0		20
1,3,5-Trimethylbenzene	0.24J	10	11	110		11	110		64-130	0		20
1,2,4-Trimethylbenzene	0.50J	10	11	110		11	110		70-130	0		20

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
1,2-Dichloroethane-d4	98		97		70-130
4-Bromofluorobenzene	112		113		70-130
Dibromofluoromethane	95		94		70-130
Toluene-d8	102		102		70-130

SEMIVOLATILES

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-01
 Client ID: TG04-MW-03-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 09:40
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/05/23 15:25
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 01/05/23 05:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	ND		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	69		15-120
4-Terphenyl-d14	74		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-02
 Client ID: TG04-MW-03-230104D
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 09:40
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/05/23 15:42
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 01/05/23 05:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	76		15-120
4-Terphenyl-d14	78		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-03
 Client ID: TG07-MW-02-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 13:20
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/05/23 15:09
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 01/05/23 05:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.90		ug/l	0.10	0.05	1
Fluorene	2.2		ug/l	0.10	0.01	1
Phenanthrene	1.8		ug/l	0.05	0.02	1
Anthracene	0.24		ug/l	0.10	0.01	1
Pyrene	0.36		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.11		ug/l	0.05	0.02	1
Chrysene	0.07	J	ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.07		ug/l	0.05	0.01	1
Benzo(a)pyrene	0.07	J	ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	0.04	J	ug/l	0.10	0.01	1
Benzo(ghi)perylene	0.04	J	ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	68		15-120
4-Terphenyl-d14	60		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-05
 Client ID: FB-230104-2
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 11:10
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:
 Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/05/23 15:58
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 01/05/23 05:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.09	J	ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.04	J	ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	92		23-120
2-Fluorobiphenyl	71		15-120
4-Terphenyl-d14	79		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-06
 Client ID: TG07-MW-03-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 14:05
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/05/23 16:14
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 01/05/23 05:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	0.13		ug/l	0.10	0.05	1
Fluorene	0.58		ug/l	0.10	0.01	1
Phenanthrene	0.63		ug/l	0.05	0.02	1
Anthracene	0.10		ug/l	0.10	0.01	1
Pyrene	0.11		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.04	J	ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	62		15-120
4-Terphenyl-d14	60		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E-SIM
 Analytical Date: 01/05/23 14:20
 Analyst: DV

Extraction Method: EPA 3510C
 Extraction Date: 01/05/23 05:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-03,05-06 Batch: WG1730130-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	0.03	J	ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	62		15-120
4-Terphenyl-d14	67		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-03,05-06 Batch: WG1730130-2 WG1730130-3								
Naphthalene	67		67		40-140	0		40
Fluorene	68		70		40-140	3		40
Phenanthrene	63		66		40-140	5		40
Anthracene	70		72		40-140	3		40
Pyrene	75		78		26-127	4		40
Benzo(a)anthracene	70		78		40-140	11		40
Chrysene	66		66		40-140	0		40
Benzo(b)fluoranthene	73		77		40-140	5		40
Benzo(a)pyrene	75		80		40-140	6		40
Indeno(1,2,3-cd)pyrene	77		80		40-140	4		40
Benzo(ghi)perylene	67		71		40-140	6		40

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	92		91		23-120
2-Fluorobiphenyl	68		69		15-120
4-Terphenyl-d14	73		78		41-149

Matrix Spike Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

<i>Parameter</i>	<i>Native Sample</i>	<i>MS Added</i>	<i>MS Found</i>	<i>MS %Recovery</i>	<i>Qual</i>	<i>MSD Found</i>	<i>MSD %Recovery</i>	<i>Qual</i>	<i>Recovery Limits</i>	<i>RPD</i>	<i>Qual</i>	<i>RPD Limits</i>
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-03,05-06 QC Batch ID: WG1730130-4 WG1730130-5 QC Sample: L2300364-03 Client ID: TG07-MW-02-230104												
Naphthalene	0.90	3.64	3.0	58		3.5	72		40-140	15		40
Fluorene	2.2	3.64	4.4	61		4.3	58		40-140	2		40
Phenanthrene	1.8	3.64	4.0	61		3.8	55		40-140	5		40
Anthracene	0.24	3.64	2.6	65		2.6	65		40-140	0		40
Pyrene	0.36	3.64	3.0	73		2.9	70		26-127	3		40
Benzo(a)anthracene	0.11	3.64	2.5	66		2.5	66		40-140	0		40
Chrysene	0.07J	3.64	2.3	63		2.2	61		40-140	4		40
Benzo(b)fluoranthene	0.07	3.64	2.5	67		2.6	70		40-140	4		40
Benzo(a)pyrene	0.07J	3.64	2.5	69		2.5	69		40-140	0		40
Indeno(1,2,3-cd)pyrene	0.04J	3.64	2.3	63		2.3	63		40-140	0		40
Benzo(ghi)perylene	0.04J	3.64	2.1	58		2.0	55		40-140	5		40

<i>Surrogate</i>	<i>MS</i>		<i>MSD</i>		<i>Acceptance Criteria</i>
	<i>% Recovery</i>	<i>Qualifier</i>	<i>% Recovery</i>	<i>Qualifier</i>	
2-Fluorobiphenyl	66		67		15-120
4-Terphenyl-d14	66		64		41-149
Nitrobenzene-d5	87		89		23-120

METALS



Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300364**Project Number:** P044.001.002**Report Date:** 01/06/23**SAMPLE RESULTS**

Lab ID: L2300364-01

Date Collected: 01/04/23 09:40

Client ID: TG04-MW-03-230104

Date Received: 01/04/23

Sample Location: 3144 W PASSYUNK AVE.

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	01/05/23 08:56	01/05/23 16:09	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-02
 Client ID: TG04-MW-03-230104D
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 09:40
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	01/05/23 08:56	01/05/23 17:06	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300364**Project Number:** P044.001.002**Report Date:** 01/06/23**SAMPLE RESULTS**

Lab ID: L2300364-03

Date Collected: 01/04/23 13:20

Client ID: TG07-MW-02-230104

Date Received: 01/04/23

Sample Location: 3144 W PASSYUNK AVE.

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	7.913		ug/l	1.000	0.3430	1	01/05/23 08:56	01/05/23 17:01	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300364**Project Number:** P044.001.002**Report Date:** 01/06/23**SAMPLE RESULTS**

Lab ID: L2300364-05

Date Collected: 01/04/23 11:10

Client ID: FB-230104-2

Date Received: 01/04/23

Sample Location: 3144 W PASSYUNK AVE.

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	01/05/23 08:56	01/05/23 15:25	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

SAMPLE RESULTS

Lab ID: L2300364-06
 Client ID: TG07-MW-03-230104
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/04/23 14:05
 Date Received: 01/04/23
 Field Prep: Refer to COC

Sample Depth:
 Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	01/05/23 08:56	01/05/23 17:11	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-03,05-06 Batch: WG1730153-1									
Lead, Dissolved	ND	ug/l	1.000	0.3430	1	01/05/23 08:56	01/05/23 14:24	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-03,05-06 Batch: WG1730153-2								
Lead, Dissolved	97		-		80-120	-		



Matrix Spike Analysis
Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-03,05-06 QC Batch ID: WG1730153-3 WG1730153-4 QC Sample: L2300364-03 Client ID: TG07-MW-02-230104												
Lead, Dissolved	7.913	530	528.9	98		518.5	96		75-125	2		20

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300364**Project Number:** P044.001.002**Report Date:** 01/06/23**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300364-01A	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-01B	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-01C	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-01D	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-01E	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-01F	Plastic 250ml HNO3 preserved	A	<2	<2	3.9	Y	Absent		PB-6020S-PPB(180)
L2300364-01G	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-01H	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-02A	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-02B	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-02C	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-02D	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-02E	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-02F	Plastic 250ml HNO3 preserved	A	<2	<2	3.9	Y	Absent		PB-6020S-PPB(180)
L2300364-02G	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-02H	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-03A	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-03A1	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-03A2	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-03B	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-03B1	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-03B2	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-03C	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300364**Project Number:** P044.001.002**Report Date:** 01/06/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300364-03C1	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-03C2	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-03D	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-03D1	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-03D2	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-03E	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-03E1	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-03E2	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-03F	Plastic 250ml HNO3 preserved	A	<2	<2	3.9	Y	Absent		PB-6020S-PPB(180)
L2300364-03F1	Plastic 250ml HNO3 preserved	A	<2	<2	3.9	Y	Absent		PB-6020S-PPB(180)
L2300364-03F2	Plastic 250ml HNO3 preserved	A	<2	<2	3.9	Y	Absent		PB-6020S-PPB(180)
L2300364-03G	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-03G1	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-03G2	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-03H	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-03H1	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-03H2	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-04A	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-04B	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-04C	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-04D	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-05A	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-05B	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-05C	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-05D	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-05E	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-05F	Plastic 250ml HNO3 preserved	A	<2	<2	3.9	Y	Absent		PB-6020S-PPB(180)
L2300364-05G	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300364**Project Number:** P044.001.002**Report Date:** 01/06/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300364-05H	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-06A	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-06B	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-06C	Vial HCl preserved	A	NA		3.9	Y	Absent		PA-8260(14)
L2300364-06D	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-06E	Vial Na2S2O3 preserved	A	NA		3.9	Y	Absent		8011(14)
L2300364-06F	Plastic 500ml HNO3 preserved	A	<2	<2	3.9	Y	Absent		PB-6020S-PPB(180)
L2300364-06G	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)
L2300364-06H	Amber 250ml unpreserved	A	7	7	3.9	Y	Absent		PA-PAHSIM-LVI(7)

Container Comments

L2300364-02H Cap cracked, sample intact.

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300364
Report Date: 01/06/23

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



ANALYTICAL REPORT

Lab Number:	L2300373
Client:	Terraphase Engineering Inc. 1100 East Hector Street Suite 416 Conshohocken, PA 19428
ATTN:	Nick Scala
Phone:	(215) 297-3502
Project Name:	FORMER PHILADELPHIA REFINERY
Project Number:	P044.001.002
Report Date:	01/13/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2300373-01	GPR794-09-1.5-2.0	SOIL	Not Specified	01/03/23 08:45	01/04/23
L2300373-02	GPR794-09-2.0-2.5	SOIL	Not Specified	01/03/23 08:55	01/04/23
L2300373-03	GPR794-09-2.0-2.5D	SOIL	Not Specified	01/03/23 08:55	01/04/23
L2300373-04	GPR794-09-3.0-3.5	SOIL	Not Specified	01/03/23 09:05	01/04/23
L2300373-05	GPR794-10-1.5-2.0	SOIL	Not Specified	01/03/23 09:45	01/04/23
L2300373-06	GPR794-10-2.0-2.5	SOIL	Not Specified	01/03/23 09:50	01/04/23
L2300373-07	GPR790-08-0.0-0.5	SOIL	Not Specified	01/03/23 10:20	01/04/23
L2300373-08	TG07-MW-04-1.5-2.0	SOIL	Not Specified	01/03/23 11:00	01/04/23
L2300373-09	TG07-MW-04-2.0-2.5	SOIL	Not Specified	01/03/23 11:10	01/04/23
L2300373-10	GPR799-08-1.0-1.5	SOIL	Not Specified	01/03/23 11:30	01/04/23
L2300373-11	GPR799-08-3.0-3.5	SOIL	Not Specified	01/03/23 11:40	01/04/23
L2300373-12	GPR791-09-0.0-0.5	SOIL	Not Specified	01/03/23 12:05	01/04/23
L2300373-13	GPR791-09-2.0-2.5	SOIL	Not Specified	01/03/23 12:10	01/04/23
L2300373-14	GPR791-09-2.5-3.0	SOIL	Not Specified	01/03/23 12:15	01/04/23
L2300373-15	GPR793-03R-2.5-3.0	SOIL	Not Specified	01/03/23 12:45	01/04/23
L2300373-16	GPR793-03R-3.0-3.5	SOIL	Not Specified	01/03/23 13:00	01/04/23
L2300373-17	GPR792-03R-1.5-2.0	SOIL	Not Specified	01/03/23 13:20	01/04/23
L2300373-18	GPR792-03R-2.0-2.5	SOIL	Not Specified	01/03/23 13:30	01/04/23
L2300373-19	GPR1117-03R-0.0-0.5	SOIL	Not Specified	01/03/23 14:40	01/04/23
L2300373-20	PB-847-15R-6.0-6.5	SOIL	Not Specified	01/04/23 09:00	01/04/23
L2300373-21	PB-847-15R-17.0-17.5	SOIL	Not Specified	01/04/23 09:10	01/04/23
L2300373-22	TG02-MW-18-15.5-16.0	SOIL	Not Specified	01/04/23 10:15	01/04/23
L2300373-23	TG01-MW-02-6.5-7.0	SOIL	Not Specified	01/04/23 12:40	01/04/23
L2300373-24	TG01-MW-02-7.0-7.5	SOIL	Not Specified	01/04/23 12:55	01/04/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2300373-25	TB-230104-1	WATER	Not Specified	01/04/23 00:00	01/04/23



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Case Narrative (continued)

Report Submission

January 13, 2023: This final report includes the results of all requested analyses.

January 10, 2023: This preliminary report includes the results of the Volatile Organics and Semivolatile Organics analyses performed on L2300373-22.

January 10, 2023: This preliminary report includes the results of the Volatile Organics and Semivolatile Organics analyses performed on L2300373-09, -16, -18, and -21 and the Total Metals analysis performed on L2300373-21.

January 06, 2023: This is a preliminary report.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Volatile Organics

L2300373-20: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (148%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

L2300373-21: The internal standard (IS) response for fluorobenzene (479%) and the surrogate recoveries for dibromofluoromethane (35%) and 4-bromofluorobenzene (675%) were outside the acceptance criteria due to obvious interferences. A copy of the chromatogram is included as an attachment to this report. Since the IS response was above method criteria, all associated compounds are considered to have a potentially low bias. A high-level analysis was performed, and those results are also reported. Differences were noted between the results of the Volatile Organics by EPA Method 5035/8260 High and Low Level analyses which have been attributed to sample non-homogeneity.

L2300373-21: The surrogate recovery is outside the acceptance criteria for 4-bromofluorobenzene (169%); however, the sample was not re-analyzed due to coelution with an obvious interference. A copy of the chromatogram is included as an attachment to this report.

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Case Narrative (continued)

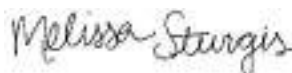
Semivolatile Organics

L2300373-15D, -16D, -17D, and -18D: The sample has elevated detection limits due to the dilution required by the sample matrix.

L2300373-16D and -18D: The surrogate recoveries are below the acceptance criteria for nitrobenzene-d5 (0%), 2-fluorobiphenyl (0%) and 4-terphenyl-d14 (0%) due to the dilution required to quantitate the sample. Re-extraction was not required; therefore, the results of the original analysis are reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Sturgis

Title: Technical Director/Representative

Date: 01/13/23

ORGANICS

VOLATILES

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-01
 Client ID: GPR794-09-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 08:45
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 13:42
 Analyst: NLK
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.098	0.0099	1
Benzene	1.0		mg/kg	0.024	0.0082	1
Toluene	0.42		mg/kg	0.049	0.027	1
Ethylbenzene	0.11		mg/kg	0.049	0.0069	1
p/m-Xylene	0.32		mg/kg	0.098	0.028	1
o-Xylene	ND		mg/kg	0.049	0.014	1
Xylenes, Total	0.32		mg/kg	0.049	0.014	1
Isopropylbenzene	17.	E	mg/kg	0.049	0.0054	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.098	0.0095	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.098	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-01 D
 Client ID: GPR794-09-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 08:45
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 01:19
 Analyst: JIC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	18.		mg/kg	0.098	0.011	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	116		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-02
 Client ID: GPR794-09-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 08:55
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 14:02
 Analyst: NLK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.097	0.0098	1
Benzene	2.6		mg/kg	0.024	0.0081	1
Toluene	1.7		mg/kg	0.049	0.026	1
Ethylbenzene	0.32		mg/kg	0.049	0.0069	1
p/m-Xylene	1.0		mg/kg	0.097	0.027	1
o-Xylene	0.11		mg/kg	0.049	0.014	1
Xylenes, Total	1.1		mg/kg	0.049	0.014	1
Isopropylbenzene	20.	E	mg/kg	0.049	0.0053	1
1,3,5-Trimethylbenzene	0.016	J	mg/kg	0.097	0.0094	1
1,2,4-Trimethylbenzene	0.047	J	mg/kg	0.097	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	97		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-02 D
 Client ID: GPR794-09-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 08:55
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 01:47
 Analyst: JIC
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	20.		mg/kg	0.12	0.013	2.5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	86		70-130
Dibromofluoromethane	114		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-03
 Client ID: GPR794-09-2.0-2.5D
 Sample Location: Not Specified

Date Collected: 01/03/23 08:55
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 14:22
 Analyst: NLK
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.093	0.0094	1
Benzene	1.1		mg/kg	0.023	0.0077	1
Toluene	0.83		mg/kg	0.046	0.025	1
Ethylbenzene	0.21		mg/kg	0.046	0.0066	1
p/m-Xylene	0.72		mg/kg	0.093	0.026	1
o-Xylene	0.092		mg/kg	0.046	0.014	1
Xylenes, Total	0.81		mg/kg	0.046	0.014	1
Isopropylbenzene	14.	E	mg/kg	0.046	0.0051	1
1,3,5-Trimethylbenzene	0.017	J	mg/kg	0.093	0.0090	1
1,2,4-Trimethylbenzene	0.042	J	mg/kg	0.093	0.016	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	103		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-03 D
 Client ID: GPR794-09-2.0-2.5D
 Sample Location: Not Specified

Date Collected: 01/03/23 08:55
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 02:14
 Analyst: JIC
 Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	14.		mg/kg	0.093	0.010	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	87		70-130
Dibromofluoromethane	117		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-05 D2
 Client ID: GPR794-10-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 09:45
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 02:41
 Analyst: JIC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	42.		mg/kg	0.47	0.051	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	88		70-130
Dibromofluoromethane	117		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-05 D
 Client ID: GPR794-10-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 09:45
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 14:41
 Analyst: NLK
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.19	0.019	2
Benzene	0.35		mg/kg	0.047	0.016	2
Toluene	0.27		mg/kg	0.094	0.051	2
Ethylbenzene	0.020	J	mg/kg	0.094	0.013	2
p/m-Xylene	0.076	J	mg/kg	0.19	0.052	2
o-Xylene	ND		mg/kg	0.094	0.027	2
Xylenes, Total	0.076	J	mg/kg	0.094	0.027	2
Isopropylbenzene	37.	E	mg/kg	0.094	0.010	2
1,3,5-Trimethylbenzene	ND		mg/kg	0.19	0.018	2
1,2,4-Trimethylbenzene	ND		mg/kg	0.19	0.031	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	111		70-130
Dibromofluoromethane	102		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-07
 Client ID: GPR790-08-0.0-0.5
 Sample Location: Not Specified

Date Collected: 01/03/23 10:20
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 12:24
 Analyst: JIC
 Percent Solids: 81%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00021	1
Benzene	0.00076		mg/kg	0.00051	0.00017	1
Toluene	0.00074	J	mg/kg	0.0010	0.00056	1
Ethylbenzene	0.00019	J	mg/kg	0.0010	0.00014	1
p/m-Xylene	0.00068	J	mg/kg	0.0020	0.00057	1
o-Xylene	ND		mg/kg	0.0010	0.00030	1
Xylenes, Total	0.00068	J	mg/kg	0.0010	0.00030	1
Isopropylbenzene	0.0063		mg/kg	0.0010	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00020	1
1,2,4-Trimethylbenzene	0.00039	J	mg/kg	0.0020	0.00034	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	114		70-130
Dibromofluoromethane	109		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-08 D2
 Client ID: TG07-MW-04-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 11:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 09:59
 Analyst: JIC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	440		mg/kg	3.0	1.0	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	106		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-08 D
 Client ID: TG07-MW-04-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 11:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 15:01
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	2.4	0.24	20
Benzene	420	E	mg/kg	0.60	0.20	20
Toluene	ND		mg/kg	1.2	0.65	20
Ethylbenzene	ND		mg/kg	1.2	0.17	20
p/m-Xylene	ND		mg/kg	2.4	0.67	20
o-Xylene	ND		mg/kg	1.2	0.35	20
Xylenes, Total	ND		mg/kg	1.2	0.35	20
Isopropylbenzene	41.		mg/kg	1.2	0.13	20
1,3,5-Trimethylbenzene	ND		mg/kg	2.4	0.23	20
1,2,4-Trimethylbenzene	ND		mg/kg	2.4	0.40	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	98		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-09 D2
 Client ID: TG07-MW-04-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 11:10
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/09/23 20:37
 Analyst: JIC
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.72	0.072	5
Benzene	160	E	mg/kg	0.18	0.059	5
Toluene	0.28	J	mg/kg	0.36	0.19	5
Ethylbenzene	0.081	J	mg/kg	0.36	0.050	5
p/m-Xylene	ND		mg/kg	0.72	0.20	5
o-Xylene	0.17	J	mg/kg	0.36	0.10	5
Xylenes, Total	0.17	J	mg/kg	0.36	0.10	5
Isopropylbenzene	42.		mg/kg	0.36	0.039	5
1,3,5-Trimethylbenzene	0.24	J	mg/kg	0.72	0.069	5
1,2,4-Trimethylbenzene	0.51	J	mg/kg	0.72	0.12	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	104		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-09 D
 Client ID: TG07-MW-04-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 11:10
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/08/23 20:26
 Analyst: JIC
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	170		mg/kg	0.72	0.24	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	113		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	92		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-10
 Client ID: GPR799-08-1.0-1.5
 Sample Location: Not Specified

Date Collected: 01/03/23 11:30
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 12:44
 Analyst: JIC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00019	1
Benzene	0.20		mg/kg	0.00047	0.00016	1
Toluene	0.0048		mg/kg	0.00094	0.00051	1
Ethylbenzene	ND		mg/kg	0.00094	0.00013	1
p/m-Xylene	ND		mg/kg	0.0019	0.00052	1
o-Xylene	ND		mg/kg	0.00094	0.00027	1
Xylenes, Total	ND		mg/kg	0.00094	0.00027	1
Isopropylbenzene	0.0044		mg/kg	0.00094	0.00010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0019	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0019	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	102		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-11 D2
 Client ID: GPR799-08-3.0-3.5
 Sample Location: Not Specified

Date Collected: 01/03/23 11:40
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 03:08
 Analyst: JIC
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	700		mg/kg	4.0	0.43	50

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	114		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-11 D
 Client ID: GPR799-08-3.0-3.5
 Sample Location: Not Specified

Date Collected: 01/03/23 11:40
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 15:20
 Analyst: NLK
 Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	1.6	0.16	10
Benzene	0.77		mg/kg	0.40	0.13	10
Toluene	ND		mg/kg	0.80	0.43	10
Ethylbenzene	0.13	J	mg/kg	0.80	0.11	10
p/m-Xylene	0.46	J	mg/kg	1.6	0.44	10
o-Xylene	ND		mg/kg	0.80	0.23	10
Xylenes, Total	0.46	J	mg/kg	0.80	0.23	10
Isopropylbenzene	460	E	mg/kg	0.80	0.087	10
1,3,5-Trimethylbenzene	ND		mg/kg	1.6	0.15	10
1,2,4-Trimethylbenzene	ND		mg/kg	1.6	0.26	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	95		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-12
 Client ID: GPR791-09-0.0-0.5
 Sample Location: Not Specified

Date Collected: 01/03/23 12:05
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 13:03
 Analyst: JIC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0016	0.00016	1
Benzene	0.0046		mg/kg	0.00041	0.00014	1
Toluene	0.0045		mg/kg	0.00081	0.00044	1
Ethylbenzene	0.00061	J	mg/kg	0.00081	0.00011	1
p/m-Xylene	0.0021		mg/kg	0.0016	0.00046	1
o-Xylene	0.00045	J	mg/kg	0.00081	0.00024	1
Xylenes, Total	0.0026	J	mg/kg	0.00081	0.00024	1
Isopropylbenzene	0.14		mg/kg	0.00081	0.00008	1
1,3,5-Trimethylbenzene	0.00028	J	mg/kg	0.0016	0.00016	1
1,2,4-Trimethylbenzene	0.00067	J	mg/kg	0.0016	0.00027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	127		70-130
Dibromofluoromethane	99		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-13
 Client ID: GPR791-09-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 12:10
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 13:23
 Analyst: JIC
 Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.0035		mg/kg	0.00049	0.00016	1
Toluene	0.00064	J	mg/kg	0.00099	0.00054	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.0043		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	99		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-15 D2
 Client ID: GPR793-03R-2.5-3.0
 Sample Location: Not Specified

Date Collected: 01/03/23 12:45
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 10:19
 Analyst: JIC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	1500		mg/kg	50	5.4	1000

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	107		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-15 D
 Client ID: GPR793-03R-2.5-3.0
 Sample Location: Not Specified

Date Collected: 01/03/23 12:45
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 03:35
 Analyst: JIC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	10	1.0	100
Benzene	ND		mg/kg	2.5	0.83	100
Toluene	ND		mg/kg	5.0	2.7	100
Ethylbenzene	ND		mg/kg	5.0	0.70	100
p/m-Xylene	ND		mg/kg	10	2.8	100
o-Xylene	ND		mg/kg	5.0	1.4	100
Xylenes, Total	ND		mg/kg	5.0	1.4	100
Isopropylbenzene	2700	E	mg/kg	5.0	0.54	100
1,3,5-Trimethylbenzene	ND		mg/kg	10	0.96	100
1,2,4-Trimethylbenzene	ND		mg/kg	10	1.7	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	90		70-130
Dibromofluoromethane	114		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-16 D2
 Client ID: GPR793-03R-3.0-3.5
 Sample Location: Not Specified

Date Collected: 01/03/23 13:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/09/23 21:32
 Analyst: JIC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	2200		mg/kg	22	2.4	400

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	109		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-16 D
 Client ID: GPR793-03R-3.0-3.5
 Sample Location: Not Specified

Date Collected: 01/03/23 13:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/08/23 20:52
 Analyst: JIC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	11	1.1	100
Benzene	ND		mg/kg	2.8	0.93	100
Toluene	ND		mg/kg	5.6	3.0	100
Ethylbenzene	ND		mg/kg	5.6	0.79	100
p/m-Xylene	ND		mg/kg	11	3.1	100
o-Xylene	ND		mg/kg	5.6	1.6	100
Xylenes, Total	ND		mg/kg	5.6	1.6	100
Isopropylbenzene	2300	E	mg/kg	5.6	0.61	100
1,3,5-Trimethylbenzene	ND		mg/kg	11	1.1	100
1,2,4-Trimethylbenzene	ND		mg/kg	11	1.9	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	107		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	93		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-17 D2
 Client ID: GPR792-03R-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 13:20
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 04:02
 Analyst: JIC
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.56	0.056	5
Benzene	0.32		mg/kg	0.14	0.047	5
Toluene	ND		mg/kg	0.28	0.15	5
Ethylbenzene	0.060	J	mg/kg	0.28	0.040	5
p/m-Xylene	ND		mg/kg	0.56	0.16	5
o-Xylene	ND		mg/kg	0.28	0.082	5
Xylenes, Total	ND		mg/kg	0.28	0.082	5
Isopropylbenzene	200	E	mg/kg	0.28	0.031	5
1,3,5-Trimethylbenzene	0.067	J	mg/kg	0.56	0.054	5
1,2,4-Trimethylbenzene	0.12	J	mg/kg	0.56	0.094	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	112		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-17 D
 Client ID: GPR792-03R-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 13:20
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 15:59
 Analyst: NLK
 Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	160		mg/kg	0.56	0.061	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	102		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-18 D2
 Client ID: GPR792-03R-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 13:30
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/09/23 21:59
 Analyst: JIC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.50	0.050	5
Benzene	0.46		mg/kg	0.12	0.041	5
Toluene	ND		mg/kg	0.25	0.14	5
Ethylbenzene	0.052	J	mg/kg	0.25	0.035	5
p/m-Xylene	ND		mg/kg	0.50	0.14	5
o-Xylene	ND		mg/kg	0.25	0.073	5
Xylenes, Total	ND		mg/kg	0.25	0.073	5
Isopropylbenzene	190	E	mg/kg	0.25	0.027	5
1,3,5-Trimethylbenzene	0.074	J	mg/kg	0.50	0.048	5
1,2,4-Trimethylbenzene	0.14	J	mg/kg	0.50	0.083	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	106		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-18 D
 Client ID: GPR792-03R-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 13:30
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/08/23 21:18
 Analyst: JIC
 Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by EPA 5035 High - Westborough Lab						
Isopropylbenzene	160		mg/kg	1.0	0.11	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	92		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-19
 Client ID: GPR1117-03R-0.0-0.5
 Sample Location: Not Specified

Date Collected: 01/03/23 14:40
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 09:20
 Analyst: JIC
 Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020	1
Benzene	0.00032	J	mg/kg	0.00050	0.00016	1
Toluene	ND		mg/kg	0.00099	0.00054	1
Ethylbenzene	ND		mg/kg	0.00099	0.00014	1
p/m-Xylene	ND		mg/kg	0.0020	0.00055	1
o-Xylene	ND		mg/kg	0.00099	0.00029	1
Xylenes, Total	ND		mg/kg	0.00099	0.00029	1
Isopropylbenzene	0.11		mg/kg	0.00099	0.00011	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	112		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-20
 Client ID: PB-847-15R-6.0-6.5
 Sample Location: Not Specified

Date Collected: 01/04/23 09:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 09:40
 Analyst: JIC
 Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.13	0.013	1
Benzene	ND		mg/kg	0.032	0.011	1
Ethylbenzene	5.4		mg/kg	0.064	0.0090	1
p/m-Xylene	2.3		mg/kg	0.13	0.036	1
o-Xylene	0.23		mg/kg	0.064	0.019	1
Xylenes, Total	2.5		mg/kg	0.064	0.019	1
Isopropylbenzene	3.2		mg/kg	0.064	0.0070	1
1,3,5-Trimethylbenzene	3.2		mg/kg	0.13	0.012	1
1,2,4-Trimethylbenzene	5.1		mg/kg	0.13	0.021	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	148	Q	70-130
Dibromofluoromethane	97		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-21
 Client ID: PB-847-15R-17.0-17.5
 Sample Location: Not Specified

Date Collected: 01/04/23 09:10
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/09/23 21:05
 Analyst: JIC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.10	0.010	1
Benzene	0.16		mg/kg	0.026	0.0085	1
Ethylbenzene	0.018	J	mg/kg	0.051	0.0073	1
p/m-Xylene	ND		mg/kg	0.10	0.029	1
o-Xylene	ND		mg/kg	0.051	0.015	1
Xylenes, Total	ND		mg/kg	0.051	0.015	1
Isopropylbenzene	1.1		mg/kg	0.051	0.0056	1
1,3,5-Trimethylbenzene	0.016	J	mg/kg	0.10	0.0099	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	116		70-130
4-Bromofluorobenzene	169	Q	70-130
Dibromofluoromethane	85		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-21
 Client ID: PB-847-15R-17.0-17.5
 Sample Location: Not Specified

Date Collected: 01/04/23 09:10
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/09/23 22:53
 Analyst: JIC
 Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by EPA 5035 Low - Westborough Lab						
Methyl tert butyl ether	ND		mg/kg	0.0018	0.00019	1
Benzene	0.0076		mg/kg	0.00046	0.00015	1
Ethylbenzene	0.0024		mg/kg	0.00093	0.00013	1
p/m-Xylene	0.00070	J	mg/kg	0.0018	0.00052	1
o-Xylene	0.0014		mg/kg	0.00093	0.00027	1
Xylenes, Total	0.0021	J	mg/kg	0.00093	0.00027	1
Isopropylbenzene	0.11		mg/kg	0.00093	0.00010	1
1,3,5-Trimethylbenzene	0.0011	J	mg/kg	0.0018	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0018	0.00031	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	120		70-130
Toluene-d8	117		70-130
4-Bromofluorobenzene	675	Q	70-130
Dibromofluoromethane	35	Q	70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-22
 Client ID: TG02-MW-18-15.5-16.0
 Sample Location: Not Specified

Date Collected: 01/04/23 10:15
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8260D
 Analytical Date: 01/06/23 15:32
 Analyst: LAC
 Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 High - Westborough Lab						
Benzene	0.034	J	mg/kg	0.037	0.012	1
Toluene	0.30		mg/kg	0.074	0.040	1
1,2-Dibromoethane	ND		mg/kg	0.037	0.022	1
Ethylbenzene	3.4		mg/kg	0.074	0.010	1
p/m-Xylene	14.		mg/kg	0.15	0.041	1
o-Xylene	5.3		mg/kg	0.074	0.022	1
Xylenes, Total	19.		mg/kg	0.074	0.022	1
Isopropylbenzene	0.42		mg/kg	0.074	0.0081	1
1,3,5-Trimethylbenzene	3.8		mg/kg	0.15	0.014	1
1,2,4-Trimethylbenzene	11.		mg/kg	0.15	0.025	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	102		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-25
 Client ID: TB-230104-1
 Sample Location: Not Specified

Date Collected: 01/04/23 00:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/05/23 10:09
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	98		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 01/05/23 09:19
Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 07,10,12-13 Batch: WG1730307-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
Toluene	ND		mg/kg	0.0010	0.00054
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	107		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/05/23 09:19
Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01-03,05,08,11,17 Batch: WG1730426-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
Toluene	ND		mg/kg	0.050	0.027
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	107		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
 Analytical Date: 01/05/23 09:43
 Analyst: PID

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 25 Batch: WG1730461-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
1,2-Dibromoethane	ND		ug/l	2.0	0.19
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	97		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/05/23 18:31
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 01-03,05,11,15,17 Batch: WG1730645-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
Toluene	ND		mg/kg	0.050	0.027
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	115		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8260D
Analytical Date: 01/06/23 08:35
Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 19 Batch: WG1730716-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
Toluene	ND		mg/kg	0.0010	0.00054
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	107		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/06/23 08:35
Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 08,15,20,22 Batch: WG1730717-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
Toluene	ND		mg/kg	0.050	0.027
1,2-Dibromoethane	ND		mg/kg	0.025	0.015
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	107		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
 Analytical Date: 01/08/23 14:47
 Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09,16,18 Batch: WG1731730-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
Toluene	ND		mg/kg	0.050	0.027
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	106		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	90		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
 Analytical Date: 01/09/23 14:43
 Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 21 Batch: WG1731733-5					
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00020
Benzene	ND		mg/kg	0.00050	0.00017
Ethylbenzene	ND		mg/kg	0.0010	0.00014
p/m-Xylene	ND		mg/kg	0.0020	0.00056
o-Xylene	ND		mg/kg	0.0010	0.00029
Xylenes, Total	ND		mg/kg	0.0010	0.00029
Isopropylbenzene	ND		mg/kg	0.0010	0.00011
1,3,5-Trimethylbenzene	ND		mg/kg	0.0020	0.00019
1,2,4-Trimethylbenzene	ND		mg/kg	0.0020	0.00033

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	116		70-130



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260D
Analytical Date: 01/09/23 14:43
Analyst: JIC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 High - Westborough Lab for sample(s): 09,16,18,21 Batch: WG1731736-5					
Methyl tert butyl ether	ND		mg/kg	0.10	0.010
Benzene	ND		mg/kg	0.025	0.0083
Toluene	ND		mg/kg	0.050	0.027
Ethylbenzene	ND		mg/kg	0.050	0.0070
p/m-Xylene	ND		mg/kg	0.10	0.028
o-Xylene	ND		mg/kg	0.050	0.014
Xylenes, Total	ND		mg/kg	0.050	0.014
Isopropylbenzene	ND		mg/kg	0.050	0.0054
1,3,5-Trimethylbenzene	ND		mg/kg	0.10	0.0096
1,2,4-Trimethylbenzene	ND		mg/kg	0.10	0.017

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	89		70-130
Dibromofluoromethane	116		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 07,10,12-13 Batch: WG1730307-3 WG1730307-4								
Methyl tert butyl ether	107		107		66-130	0		30
Benzene	108		110		70-130	2		30
Toluene	104		108		70-130	4		30
Ethylbenzene	107		110		70-130	3		30
p/m-Xylene	108		112		70-130	4		30
o-Xylene	108		112		70-130	4		30
Isopropylbenzene	106		108		70-130	2		30
1,3,5-Trimethylbenzene	108		109		70-130	1		30
1,2,4-Trimethylbenzene	107		108		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	100		97		70-130
Dibromofluoromethane	97		98		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01-03,05,08,11,17 Batch: WG1730426-3 WG1730426-4								
Methyl tert butyl ether	107		107		66-130	0		30
Benzene	108		110		70-130	2		30
Toluene	104		108		70-130	4		30
Ethylbenzene	107		110		70-130	3		30
p/m-Xylene	108		112		70-130	4		30
o-Xylene	108		112		70-130	4		30
Isopropylbenzene	106		108		70-130	2		30
1,3,5-Trimethylbenzene	108		109		70-130	1		30
1,2,4-Trimethylbenzene	107		108		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		97		70-130
Toluene-d8	98		99		70-130
4-Bromofluorobenzene	100		97		70-130
Dibromofluoromethane	97		98		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 25 Batch: WG1730461-3 WG1730461-4								
Methyl tert butyl ether	97		95		63-130	2		20
Benzene	110		110		70-130	0		20
1,2-Dichloroethane	100		100		70-130	0		20
Toluene	110		100		70-130	10		20
1,2-Dibromoethane	100		100		70-130	0		20
Ethylbenzene	110		100		70-130	10		20
p/m-Xylene	110		105		70-130	5		20
o-Xylene	105		105		70-130	0		20
Isopropylbenzene	110		110		70-130	0		20
1,3,5-Trimethylbenzene	110		110		64-130	0		20
1,2,4-Trimethylbenzene	110		100		70-130	10		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		98		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	96		96		70-130
Dibromofluoromethane	98		96		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 01-03,05,11,15,17 Batch: WG1730645-3 WG1730645-4								
Methyl tert butyl ether	101		101		66-130	0		30
Benzene	111		111		70-130	0		30
Toluene	102		101		70-130	1		30
Ethylbenzene	105		104		70-130	1		30
p/m-Xylene	110		109		70-130	1		30
o-Xylene	105		106		70-130	1		30
Isopropylbenzene	100		102		70-130	2		30
1,3,5-Trimethylbenzene	100		102		70-130	2		30
1,2,4-Trimethylbenzene	100		102		70-130	2		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		98		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	82		85		70-130
Dibromofluoromethane	113		114		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 19 Batch: WG1730716-3 WG1730716-4								
Methyl tert butyl ether	85		92		66-130	8		30
Benzene	86		91		70-130	6		30
Toluene	84		90		70-130	7		30
Ethylbenzene	86		92		70-130	7		30
p/m-Xylene	88		94		70-130	7		30
o-Xylene	87		93		70-130	7		30
Isopropylbenzene	87		91		70-130	4		30
1,3,5-Trimethylbenzene	87		93		70-130	7		30
1,2,4-Trimethylbenzene	87		92		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		98		70-130
Dibromofluoromethane	98		99		70-130

Lab Control Sample Analysis Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 08,15,20,22 Batch: WG1730717-3 WG1730717-4								
Methyl tert butyl ether	85		92		66-130	8		30
Benzene	86		91		70-130	6		30
Toluene	84		90		70-130	7		30
1,2-Dibromoethane	86		93		70-130	8		30
Ethylbenzene	86		92		70-130	7		30
p/m-Xylene	88		94		70-130	7		30
o-Xylene	87		93		70-130	7		30
Isopropylbenzene	87		91		70-130	4		30
1,3,5-Trimethylbenzene	87		93		70-130	7		30
1,2,4-Trimethylbenzene	87		92		70-130	6		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		97		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	100		98		70-130
Dibromofluoromethane	98		99		70-130



Lab Control Sample Analysis Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09,16,18 Batch: WG1731730-3 WG1731730-4								
Methyl tert butyl ether	100		101		66-130	1		30
Benzene	106		107		70-130	1		30
Toluene	103		103		70-130	0		30
Ethylbenzene	107		107		70-130	0		30
p/m-Xylene	103		103		70-130	0		30
o-Xylene	100		100		70-130	0		30
Isopropylbenzene	112		112		70-130	0		30
1,3,5-Trimethylbenzene	110		110		70-130	0		30
1,2,4-Trimethylbenzene	108		108		70-130	0		30

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	107		106		70-130
Toluene-d8	108		108		70-130
4-Bromofluorobenzene	116		116		70-130
Dibromofluoromethane	91		91		70-130



Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 21 Batch: WG1731733-3 WG1731733-4								
Methyl tert butyl ether	92		94		66-130	2		30
Benzene	102		105		70-130	3		30
Ethylbenzene	96		98		70-130	2		30
p/m-Xylene	101		104		70-130	3		30
o-Xylene	99		101		70-130	2		30
Isopropylbenzene	93		95		70-130	2		30
1,3,5-Trimethylbenzene	95		96		70-130	1		30
1,2,4-Trimethylbenzene	95		96		70-130	1		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		99		70-130
Toluene-d8	95		94		70-130
4-Bromofluorobenzene	84		84		70-130
Dibromofluoromethane	109		110		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 High - Westborough Lab Associated sample(s): 09,16,18,21 Batch: WG1731736-3 WG1731736-4								
Methyl tert butyl ether	92		94		66-130	2		30
Benzene	102		105		70-130	3		30
Toluene	94		95		70-130	1		30
Ethylbenzene	96		98		70-130	2		30
p/m-Xylene	101		104		70-130	3		30
o-Xylene	99		101		70-130	2		30
Isopropylbenzene	93		95		70-130	2		30
1,3,5-Trimethylbenzene	95		96		70-130	1		30
1,2,4-Trimethylbenzene	95		96		70-130	1		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	97		99		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	84		84		70-130
Dibromofluoromethane	109		110		70-130

SEMIVOLATILES

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-01
 Client ID: GPR794-09-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 08:45
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 13:01
 Analyst: MG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.031	J	mg/kg	0.036	0.022	1
Benzo(a)pyrene	0.19		mg/kg	0.14	0.044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	61		30-120
4-Terphenyl-d14	58		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-02
 Client ID: GPR794-09-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 08:55
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 13:26
 Analyst: MG
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.27		mg/kg	0.036	0.022	1
Benzo(a)pyrene	0.087	J	mg/kg	0.14	0.044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	69		18-120



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-03
 Client ID: GPR794-09-2.0-2.5D
 Sample Location: Not Specified

Date Collected: 01/03/23 08:55
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 13:50
 Analyst: MG
 Percent Solids: 92%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.20		mg/kg	0.036	0.022	1
Benzo(a)pyrene	0.058	J	mg/kg	0.14	0.043	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	65		18-120



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-05
 Client ID: GPR794-10-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 09:45
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 14:14
 Analyst: MG
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.30		mg/kg	0.036	0.022	1
Benzo(a)pyrene	0.047	J	mg/kg	0.14	0.044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	66		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-07
 Client ID: GPR790-08-0.0-0.5
 Sample Location: Not Specified

Date Collected: 01/03/23 10:20
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 14:38
 Analyst: MG
 Percent Solids: 81%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Naphthalene	0.036	J	mg/kg	0.040	0.024	1
Benzo(a)pyrene	0.47		mg/kg	0.16	0.049	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	52		23-120
2-Fluorobiphenyl	42		30-120
4-Terphenyl-d14	42		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-08
 Client ID: TG07-MW-04-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 11:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 15:02
 Analyst: MG
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Naphthalene	1.0		mg/kg	0.038	0.023	1
Benzo(a)pyrene	0.076	J	mg/kg	0.15	0.046	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	61		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-09
 Client ID: TG07-MW-04-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 11:10
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/08/23 19:06
 Analyst: CMM
 Percent Solids: 77%

Extraction Method: EPA 3546
 Extraction Date: 01/07/23 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.23		mg/kg	0.043	0.026	1
Benzo(a)pyrene	ND		mg/kg	0.17	0.052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	37		23-120
2-Fluorobiphenyl	48		30-120
4-Terphenyl-d14	33		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-10
 Client ID: GPR799-08-1.0-1.5
 Sample Location: Not Specified

Date Collected: 01/03/23 11:30
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 15:26
 Analyst: MG
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
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Naphthalene	0.032	J	mg/kg	0.037	0.022	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	69		30-120
4-Terphenyl-d14	67		18-120



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-11
 Client ID: GPR799-08-3.0-3.5
 Sample Location: Not Specified

Date Collected: 01/03/23 11:40
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 15:50
 Analyst: MG
 Percent Solids: 77%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.6		mg/kg	0.042	0.026	1
Benzo(a)pyrene	0.83		mg/kg	0.17	0.052	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	66		30-120
4-Terphenyl-d14	60		18-120



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-12
 Client ID: GPR791-09-0.0-0.5
 Sample Location: Not Specified

Date Collected: 01/03/23 12:05
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 16:14
 Analyst: MG
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.12		mg/kg	0.036	0.022	1
Benzo(a)pyrene	0.51		mg/kg	0.14	0.044	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	65		30-120
4-Terphenyl-d14	60		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-13
 Client ID: GPR791-09-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 12:10
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 16:38
 Analyst: MG
 Percent Solids: 90%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.037	0.022	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1

Naphthalene	ND		mg/kg	0.037	0.022	1
Benzo(a)pyrene	ND		mg/kg	0.15	0.045	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	68		30-120
4-Terphenyl-d14	61		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-15 D
 Client ID: GPR793-03R-2.5-3.0
 Sample Location: Not Specified

Date Collected: 01/03/23 12:45
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/06/23 01:54
 Analyst: CMM
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Naphthalene	ND		mg/kg	0.18	0.11	5
Benzo(a)pyrene	ND		mg/kg	0.72	0.22	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	79		18-120



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-16 D
 Client ID: GPR793-03R-3.0-3.5
 Sample Location: Not Specified

Date Collected: 01/03/23 13:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/10/23 06:07
 Analyst: SLR
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 01/07/23 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.73	0.45	20
Benzo(a)pyrene	ND		mg/kg	2.9	0.89	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	0	Q	23-120
2-Fluorobiphenyl	0	Q	30-120
4-Terphenyl-d14	0	Q	18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-17 D
 Client ID: GPR792-03R-1.5-2.0
 Sample Location: Not Specified

Date Collected: 01/03/23 13:20
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/06/23 03:31
 Analyst: CMM
 Percent Solids: 86%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.19	0.11	5
Benzo(a)pyrene	ND		mg/kg	0.75	0.23	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	49		30-120
4-Terphenyl-d14	62		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-18 D
 Client ID: GPR792-03R-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 13:30
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/10/23 06:31
 Analyst: SLR
 Percent Solids: 91%

Extraction Method: EPA 3546
 Extraction Date: 01/07/23 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	ND		mg/kg	0.71	0.44	20
Benzo(a)pyrene	ND		mg/kg	2.8	0.87	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	0	Q	23-120
2-Fluorobiphenyl	0	Q	30-120
4-Terphenyl-d14	0	Q	18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-19
 Client ID: GPR1117-03R-0.0-0.5
 Sample Location: Not Specified

Date Collected: 01/03/23 14:40
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 17:50
 Analyst: MG
 Percent Solids: 84%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	0.46		mg/kg	0.039	0.024	1
Benzo(a)pyrene	0.76		mg/kg	0.16	0.048	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	70		30-120
4-Terphenyl-d14	67		18-120



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-20
 Client ID: PB-847-15R-6.0-6.5
 Sample Location: Not Specified

Date Collected: 01/04/23 09:00
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 18:14
 Analyst: MG
 Percent Solids: 82%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
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Naphthalene	7.5		mg/kg	0.040	0.024	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	79		23-120
2-Fluorobiphenyl	63		30-120
4-Terphenyl-d14	56		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-21
 Client ID: PB-847-15R-17.0-17.5
 Sample Location: Not Specified

Date Collected: 01/04/23 09:10
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/08/23 20:17
 Analyst: CMM
 Percent Solids: 87%

Extraction Method: EPA 3546
 Extraction Date: 01/07/23 09:51

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
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Naphthalene	1.6		mg/kg	0.038	0.023	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	44		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	50		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-22
 Client ID: TG02-MW-18-15.5-16.0
 Sample Location: Not Specified

Date Collected: 01/04/23 10:15
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:

Matrix: Soil
 Analytical Method: 1,8270E
 Analytical Date: 01/05/23 18:38
 Analyst: JG
 Percent Solids: 72%

Extraction Method: EPA 3546
 Extraction Date: 01/05/23 06:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Naphthalene	1.4		mg/kg	0.045	0.027	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	62		30-120
4-Terphenyl-d14	59		18-120

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270E
Analytical Date: 01/04/23 22:58
Analyst: IM

Extraction Method: EPA 3546
Extraction Date: 01/04/23 17:12

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03,05,07-08,10-13,15,17,19-20,22 Batch: WG1730021-1					
Naphthalene	ND		mg/kg	0.033	0.020
Benzo(a)pyrene	ND		mg/kg	0.13	0.040

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	75		25-120
Phenol-d6	74		10-120
Nitrobenzene-d5	63		23-120
2-Fluorobiphenyl	79		30-120
2,4,6-Tribromophenol	76		10-136
4-Terphenyl-d14	90		18-120



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E
 Analytical Date: 01/06/23 22:06
 Analyst: CMM

Extraction Method: EPA 3546
 Extraction Date: 01/06/23 13:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 09,16,18,21 Batch: WG1730747-1					
Naphthalene	ND		mg/kg	0.033	0.020
Benzo(a)pyrene	ND		mg/kg	0.13	0.040

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	67		23-120
2-Fluorobiphenyl	58		30-120
4-Terphenyl-d14	67		18-120



Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03,05,07-08,10-13,15,17,19-20,22 Batch: WG1730021-2 WG1730021-3								
Naphthalene	66		66		40-140	0		50
Benzo(a)pyrene	77		78		40-140	1		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
2-Fluorophenol	67		67		25-120
Phenol-d6	66		65		10-120
Nitrobenzene-d5	58		58		23-120
2-Fluorobiphenyl	70		68		30-120
2,4,6-Tribromophenol	70		68		10-136
4-Terphenyl-d14	76		76		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 09,16,18,21 Batch: WG1730747-2 WG1730747-3								
Naphthalene	57		57		40-140	0		50
Benzo(a)pyrene	57		56		40-140	2		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
Nitrobenzene-d5	69		68		23-120
2-Fluorobiphenyl	58		59		30-120
4-Terphenyl-d14	65		64		18-120

METALS



Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-20

Date Collected: 01/04/23 09:00

Client ID: PB-847-15R-6.0-6.5

Date Received: 01/04/23

Sample Location: Not Specified

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	6.75		mg/kg	2.37	0.127	1	01/05/23 07:30	01/05/23 11:04	EPA 3050B	1,6010D	EGW



Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-21

Date Collected: 01/04/23 09:10

Client ID: PB-847-15R-17.0-17.5

Date Received: 01/04/23

Sample Location: Not Specified

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	5.90		mg/kg	2.26	0.121	1	01/09/23 22:00	01/10/23 08:24	EPA 3050B	1,6010D	EGW



Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300373

Project Number: P044.001.002

Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-22

Date Collected: 01/04/23 10:15

Client ID: TG02-MW-18-15.5-16.0

Date Received: 01/04/23

Sample Location: Not Specified

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Percent Solids: 72%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Lead, Total	83.5		mg/kg	2.63	0.141	1	01/05/23 07:30	01/05/23 11:09	EPA 3050B	1,6010D	EGW



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 20,22 Batch: WG1730143-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	01/05/23 07:30	01/05/23 10:32	1,6010D	EGW

Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 21 Batch: WG1731076-1									
Lead, Total	ND	mg/kg	2.00	0.107	1	01/09/23 22:00	01/10/23 08:02	1,6010D	EGW

Prep Information

Digestion Method: EPA 3050B



Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 20,22 Batch: WG1730143-2 SRM Lot Number: D116-540								
Lead, Total	104		-		83-117	-		
Total Metals - Mansfield Lab Associated sample(s): 21 Batch: WG1731076-2 SRM Lot Number: D116-540								
Lead, Total	101		-		83-117	-		



Matrix Spike Analysis Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 20,22 QC Batch ID: WG1730143-3 QC Sample: L2300289-01 Client ID: MS Sample												
Lead, Total	26.7	47.8	63.5	77		-	-		75-125	-		20
Total Metals - Mansfield Lab Associated sample(s): 21 QC Batch ID: WG1731076-3 QC Sample: L2300989-03 Client ID: MS Sample												
Lead, Total	12.6	45.2	56.6	97		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Project Number: P044.001.002

Lab Number: L2300373

Report Date: 01/13/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 20,22 QC Batch ID: WG1730143-4 QC Sample: L2300289-01 Client ID: DUP Sample						
Lead, Total	26.7	24.3	mg/kg	9		20
Total Metals - Mansfield Lab Associated sample(s): 21 QC Batch ID: WG1731076-4 QC Sample: L2300989-03 Client ID: DUP Sample						
Lead, Total	12.6	10.6	mg/kg	17		20

INORGANICS & MISCELLANEOUS

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-01
Client ID: GPR794-09-1.5-2.0
Sample Location: Not Specified

Date Collected: 01/03/23 08:45
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.4		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-02
Client ID: GPR794-09-2.0-2.5
Sample Location: Not Specified

Date Collected: 01/03/23 08:55
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.2		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-03
Client ID: GPR794-09-2.0-2.5D
Sample Location: Not Specified

Date Collected: 01/03/23 08:55
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	92.0		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-05
Client ID: GPR794-10-1.5-2.0
Sample Location: Not Specified

Date Collected: 01/03/23 09:45
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.7		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-07
Client ID: GPR790-08-0.0-0.5
Sample Location: Not Specified

Date Collected: 01/03/23 10:20
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.3		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**SAMPLE RESULTS**

Lab ID: L2300373-08

Date Collected: 01/03/23 11:00

Client ID: TG07-MW-04-1.5-2.0

Date Received: 01/04/23

Sample Location: Not Specified

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.2		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**SAMPLE RESULTS**

Lab ID: L2300373-09

Date Collected: 01/03/23 11:10

Client ID: TG07-MW-04-2.0-2.5

Date Received: 01/04/23

Sample Location: Not Specified

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	76.8		%	0.100	NA	1	-	01/06/23 17:00	121,2540G	MF



Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**SAMPLE RESULTS**

Lab ID: L2300373-10

Date Collected: 01/03/23 11:30

Client ID: GPR799-08-1.0-1.5

Date Received: 01/04/23

Sample Location: Not Specified

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.4		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-11
Client ID: GPR799-08-3.0-3.5
Sample Location: Not Specified

Date Collected: 01/03/23 11:40
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.2		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-12
Client ID: GPR791-09-0.0-0.5
Sample Location: Not Specified

Date Collected: 01/03/23 12:05
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-13
Client ID: GPR791-09-2.0-2.5
Sample Location: Not Specified

Date Collected: 01/03/23 12:10
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.0		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-15
Client ID: GPR793-03R-2.5-3.0
Sample Location: Not Specified

Date Collected: 01/03/23 12:45
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.8		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-16
Client ID: GPR793-03R-3.0-3.5
Sample Location: Not Specified

Date Collected: 01/03/23 13:00
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.5		%	0.100	NA	1	-	01/06/23 17:00	121,2540G	MF



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-17
Client ID: GPR792-03R-1.5-2.0
Sample Location: Not Specified

Date Collected: 01/03/23 13:20
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.1		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-18
 Client ID: GPR792-03R-2.0-2.5
 Sample Location: Not Specified

Date Collected: 01/03/23 13:30
 Date Received: 01/04/23
 Field Prep: Not Specified

Sample Depth:
 Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.1		%	0.100	NA	1	-	01/06/23 17:00	121,2540G	MF



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-19
Client ID: GPR1117-03R-0.0-0.5
Sample Location: Not Specified

Date Collected: 01/03/23 14:40
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-20
Client ID: PB-847-15R-6.0-6.5
Sample Location: Not Specified

Date Collected: 01/04/23 09:00
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	01/05/23 08:02	121,2540G	RI



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-21
Client ID: PB-847-15R-17.0-17.5
Sample Location: Not Specified

Date Collected: 01/04/23 09:10
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.7		%	0.100	NA	1	-	01/06/23 17:00	121,2540G	MF



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300373
Report Date: 01/13/23

SAMPLE RESULTS

Lab ID: L2300373-22
Client ID: TG02-MW-18-15.5-16.0
Sample Location: Not Specified

Date Collected: 01/04/23 10:15
Date Received: 01/04/23
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	72.2		%	0.100	NA	1	-	01/05/23 08:16	121,2540G	RI



Lab Duplicate Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Project Number: P044.001.002

Lab Number: L2300373

Report Date: 01/13/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03,05,07-08,10-13,15,17,19-20 QC Batch ID: WG1730150-1 QC Sample: L2300262-01 Client ID: DUP Sample						
Solids, Total	91.4	92.1	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 22 QC Batch ID: WG1730152-1 QC Sample: L2300472-01 Client ID: DUP Sample						
Solids, Total	78.1	76.4	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 09,16,18,21 QC Batch ID: WG1730839-1 QC Sample: L2300373-09 Client ID: TG07-MW-04-2.0-2.5						
Solids, Total	76.8	78.0	%	2		20

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300373-01A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-01B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-01C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-01D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-01E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-01X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-01Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-01Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-02A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-02B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-02C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-02D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-02E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-02X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-02Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-02Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-03A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-03B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-03C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-03D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-03E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-03X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-03Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300373-03Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-04A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-04B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-04C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-04D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L2300373-04E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HOLD-8270(14)
L2300373-04X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-04Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	HOLD-8260HLW(14)
L2300373-04Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	HOLD-8260HLW(14)
L2300373-05A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-05B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-05C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-05D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-05E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-05X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-05Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-05Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-06A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-06B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-06C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-06D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L2300373-06E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HOLD-8270(14)
L2300373-06X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-06Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	HOLD-8260HLW(14)
L2300373-06Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	HOLD-8260HLW(14)
L2300373-07A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-07B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-07C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300373-07D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-07E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-07X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-07Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-07Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-08A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-08B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-08C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-08D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-08E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-08X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-08Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-08Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-09A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-09B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-09C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-09D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-09E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-09X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-09Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-09Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-10A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-10B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-10C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-10D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-10E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-10X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-10Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300373-10Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-11A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-11B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-11C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-11D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-11E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-11X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-11Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-11Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-12A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-12B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-12C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-12D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-12E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-12X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-12Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-12Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-13A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-13B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-13C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-13D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-13E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-13X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-13Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-13Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-14A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-14B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-14C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300373-14D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L2300373-14E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HOLD-8270(14)
L2300373-14X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-14Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	HOLD-8260HLW(14)
L2300373-14Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	HOLD-8260HLW(14)
L2300373-15A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-15B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-15C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-15D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-15E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-15X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-15Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-15Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-16A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-16B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-16C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-16D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-16E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-16X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-16Y	Vial Water preserved split	A	NA		5.2	Y	Absent	06-JAN-23 13:16	PA-8260HLW(14)
L2300373-16Z	Vial Water preserved split	A	NA		5.2	Y	Absent	06-JAN-23 13:16	PA-8260HLW(14)
L2300373-17A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-17B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-17C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-17D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-17E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-17X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-17Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300373-17Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-18A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-18B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-18C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-18D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-18E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-18X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-18Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-18Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-19A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-19B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-19C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-19D	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-19E	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-19X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-19Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-19Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-20A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-20B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-20C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-20D	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2300373-20E	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-20F	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-20X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-20Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-20Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:03	PA-8260HLW(14)
L2300373-21A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2300373-21B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300373**Project Number:** P044.001.002**Report Date:** 01/13/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300373-21C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2300373-21D	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2300373-21E	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-21F	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-21X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260H(14),PA-8260HLW(14)
L2300373-21Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:05	PA-8260H(14),PA-8260HLW(14)
L2300373-21Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:05	PA-8260H(14),PA-8260HLW(14)
L2300373-22A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-22B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-22C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-22D	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		PB-TI(180)
L2300373-22E	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		TS(7)
L2300373-22F	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		PA-PAH(14)
L2300373-22X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		PA-8260HLW(14)
L2300373-22Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:05	PA-8260HLW(14)
L2300373-22Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:05	PA-8260HLW(14)
L2300373-23A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-23B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-23C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-23D	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		HOLD-METAL(180)
L2300373-23E	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L2300373-23F	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HOLD-8270(14)
L2300373-23X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-23Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:05	HOLD-8260HLW(14)
L2300373-23Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:05	HOLD-8260HLW(14)
L2300373-24A	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-24B	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-24C	5 gram Encore Sampler	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Serial_No:01132308:58
Lab Number: L2300373
Report Date: 01/13/23

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300373-24D	Glass 60mL/2oz unpreserved	A	NA		5.2	Y	Absent		HOLD-METAL(180)
L2300373-24E	Plastic 2oz unpreserved for TS	A	NA		5.2	Y	Absent		HOLD-WETCHEM()
L2300373-24F	Glass 120ml/4oz unpreserved	A	NA		5.2	Y	Absent		HOLD-8270(14)
L2300373-24X	Vial MeOH preserved split	A	NA		5.2	Y	Absent		HOLD-8260HLW(14)
L2300373-24Y	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:05	HOLD-8260HLW(14)
L2300373-24Z	Vial Water preserved split	A	NA		5.2	Y	Absent	05-JAN-23 07:05	HOLD-8260HLW(14)
L2300373-25A	Vial HCl preserved	A	NA		5.2	Y	Absent		PA-8260(14)
L2300373-25B	Vial HCl preserved	A	NA		5.2	Y	Absent		PA-8260(14)

*Values in parentheses indicate holding time in days



Project Name: FORMER PHILADELPHIA REFINERY
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GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

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REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.
- 121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

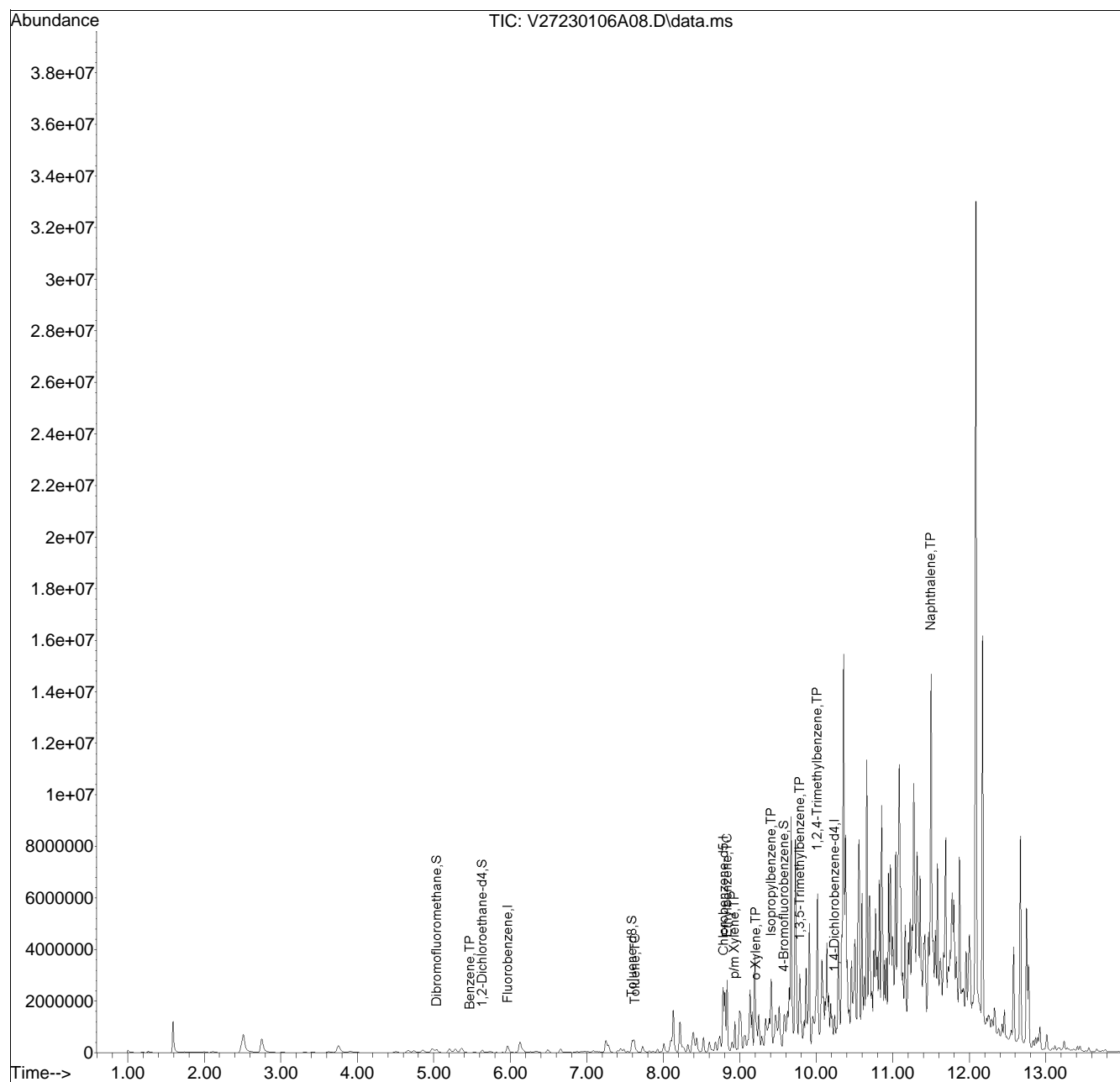
For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA127\2023\230106A\
 Data File : V27230106A08.D
 Acq On : 06 Jan 2023 09:40 am
 Operator : VOA127:JIC
 Sample : L2300373-20,31H,5.78,5,0.100,,X,R3B
 Misc : WG1730717,ICAL19627
 ALS Vial : 8 Sample Multiplier: 1

Quant Time: Jan 06 10:20:59 2023
 Quant Method : I:\VOLATILES\VOA127\2023\230106A\V127_221227N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Wed Dec 28 14:42:32 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list06A\V27230106A01.D•

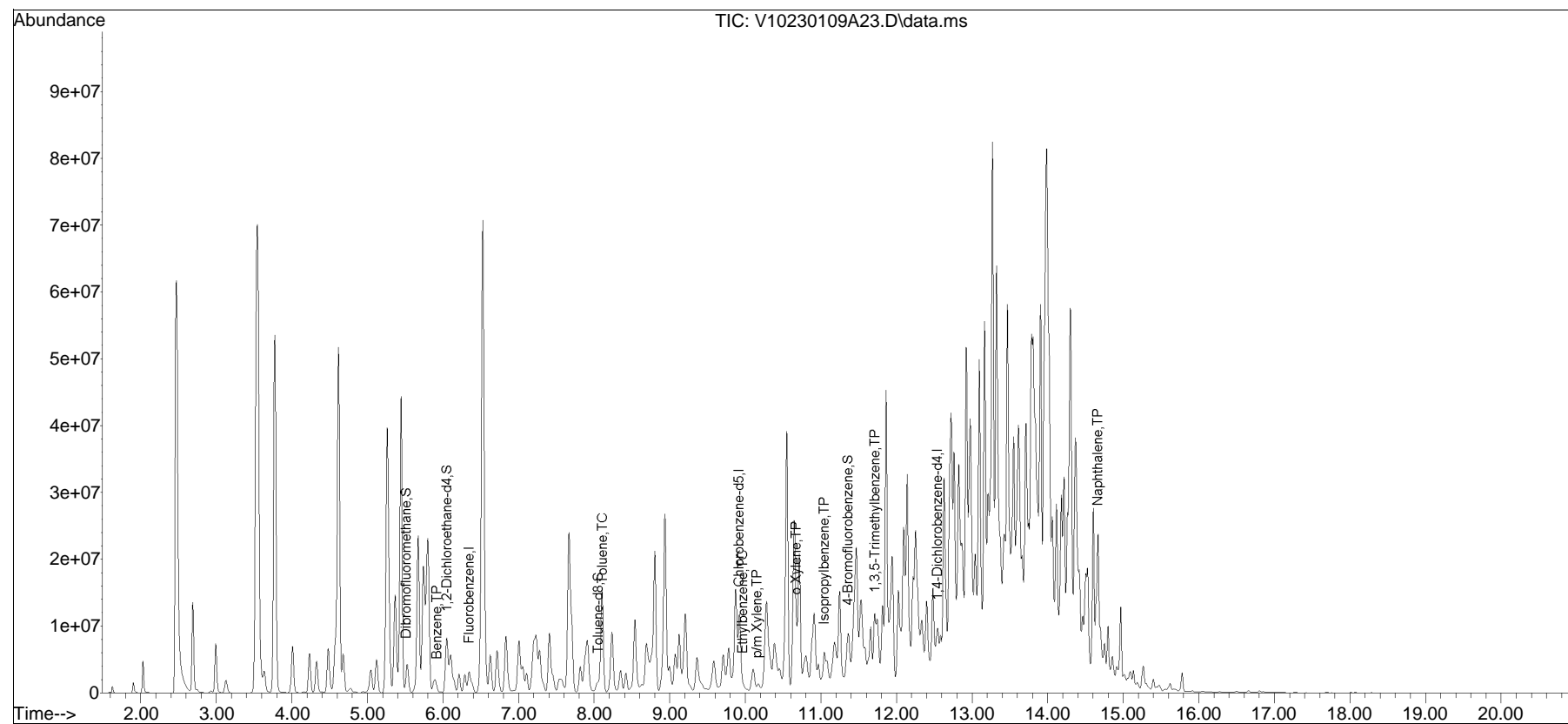


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230109A\
 Data File : V10230109A23.D
 Acq On : 9 Jan 2023 10:53 pm
 Operator : VOA110:JIC
 Sample : 12300373-21,31,6.22,5,,z,r3b
 Misc : WG1731733,ICAL19281
 ALS Vial : 23 Sample Multiplier: 1

Quant Time: Jan 10 08:29:30 2023
 Quant Method : I:\VOLATILES\VOA110\2023\230109A\V110_220822N_8260.m
 Quant Title : VOLATILES BY GC/MS
 QLast Update : Tue Aug 23 09:34:28 2022
 Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list09A\V10230109A02.D•

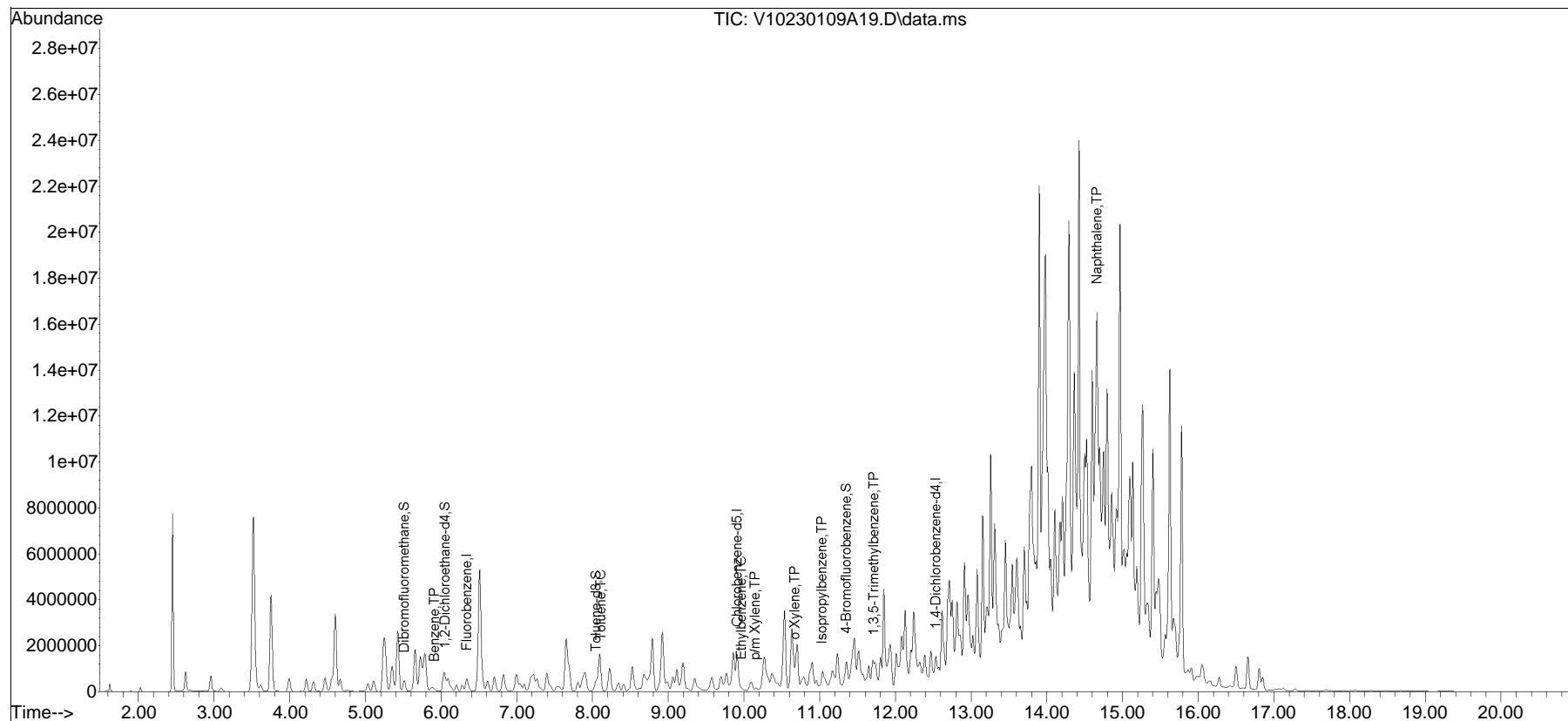


Quantitation Report (QT Reviewed)

Data Path : I:\VOLATILES\VOA110\2023\230109A\
Data File : V10230109A19.D
Acq On : 9 Jan 2023 9:05 pm
Operator : VOA110:JIC
Sample : 12300373-21,31h,6.58,5,0.100,,x,r3b
Misc : WG1731736,ICAL19281
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Jan 10 08:27:54 2023
Quant Method : I:\VOLATILES\VOA110\2023\230109A\V110_220822N_8260.m
Quant Title : VOLATILES BY GC/MS
QLast Update : Tue Aug 23 09:34:28 2022
Response via : Initial Calibration

Sub List : 8260-PA_ShortList - PA Short list09A\V10230109A02.D•





ANALYTICAL REPORT

Lab Number:	L2300961
Client:	Terraphase Engineering Inc. 100 Canal Pointe Boulevard Suite 108 Princeton, NJ 08540
ATTN:	Nick Scala
Phone:	(609) 236-8171
Project Name:	FORMER PHILADELPHIA REFINERY
Project Number:	P044.001.002
Report Date:	01/11/23

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2300961-01	TG07-MW-05-230105	WATER	3144 W PASSYUNK AVE.	01/05/23 09:50	01/06/23
L2300961-02	TG07-MW-04-230105	WATER	3144 W PASSYUNK AVE.	01/05/23 11:05	01/06/23
L2300961-03	TG07-MW-01-230105	WATER	3144 W PASSYUNK AVE.	01/05/23 14:20	01/06/23
L2300961-04	TG07-MW-08-230105	WATER	3144 W PASSYUNK AVE.	01/05/23 15:05	01/06/23
L2300961-05	TG04-MW-01-230106	WATER	3144 W PASSYUNK AVE.	01/06/23 10:30	01/06/23
L2300961-06	S-219-230106	WATER	3144 W PASSYUNK AVE.	01/06/23 09:50	01/06/23
L2300961-07	TB-230106-2	WATER	3144 W PASSYUNK AVE.	01/06/23 00:00	01/06/23

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

Case Narrative (continued)

Report Revision

January 11, 2023: This report includes the results of the 1,2-Dibromoethane by Method 8260D performed on L2300961-01 through -07.

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Caitlin Walukevich

Title: Technical Director/Representative

Date: 01/11/23

ORGANICS

VOLATILES

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-01
 Client ID: TG07-MW-05-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 09:50
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/09/23 13:59
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/09/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-01 D
 Client ID: TG07-MW-05-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 09:50
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/07/23 17:50
 Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	100	17.	100
Benzene	11000		ug/l	50	16.	100
1,2-Dichloroethane	ND		ug/l	50	13.	100
Toluene	200		ug/l	75	20.	100
1,2-Dibromoethane	ND		ug/l	200	19.	100
Ethylbenzene	34	J	ug/l	50	17.	100
p/m-Xylene	41	J	ug/l	100	33.	100
o-Xylene	ND		ug/l	100	39.	100
Xylenes, Total	41	J	ug/l	100	33.	100
Isopropylbenzene	7200		ug/l	50	19.	100
1,3,5-Trimethylbenzene	ND		ug/l	250	22.	100
1,2,4-Trimethylbenzene	30	J	ug/l	250	19.	100

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	91		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	93		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-02
 Client ID: TG07-MW-04-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 11:05
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/09/23 14:07
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/09/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-02 D
 Client ID: TG07-MW-04-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 11:05
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/07/23 17:27
 Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	2.0	0.33	2
Benzene	36		ug/l	1.0	0.32	2
1,2-Dichloroethane	ND		ug/l	1.0	0.26	2
Toluene	3.8		ug/l	1.5	0.41	2
1,2-Dibromoethane	ND		ug/l	4.0	0.39	2
Ethylbenzene	1.9		ug/l	1.0	0.33	2
p/m-Xylene	4.7		ug/l	2.0	0.66	2
o-Xylene	2.0		ug/l	2.0	0.78	2
Xylenes, Total	6.7		ug/l	2.0	0.66	2
Isopropylbenzene	290		ug/l	1.0	0.37	2
1,3,5-Trimethylbenzene	0.72	J	ug/l	5.0	0.43	2
1,2,4-Trimethylbenzene	1.4	J	ug/l	5.0	0.38	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	109		70-130
Dibromofluoromethane	83		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-03
 Client ID: TG07-MW-01-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 14:20
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/09/23 14:16
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/09/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-03
 Client ID: TG07-MW-01-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 14:20
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/07/23 17:04
 Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	0.34	J	ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	0.25	J	ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	99		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-04
 Client ID: TG07-MW-08-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 15:05
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/09/23 14:24
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/09/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-04 D
 Client ID: TG07-MW-08-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 15:05
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/07/23 16:41
 Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	25	4.2	25
Benzene	ND		ug/l	12	4.0	25
1,2-Dichloroethane	ND		ug/l	12	3.3	25
Toluene	ND		ug/l	19	5.1	25
1,2-Dibromoethane	ND		ug/l	50	4.8	25
Ethylbenzene	ND		ug/l	12	4.2	25
p/m-Xylene	ND		ug/l	25	8.3	25
o-Xylene	ND		ug/l	25	9.8	25
Xylenes, Total	ND		ug/l	25	8.3	25
Isopropylbenzene	4400		ug/l	12	4.7	25
1,3,5-Trimethylbenzene	ND		ug/l	62	5.4	25
1,2,4-Trimethylbenzene	ND		ug/l	62	4.8	25

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	110		70-130
Dibromofluoromethane	96		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-05
 Client ID: TG04-MW-01-230106
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/06/23 10:30
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/09/23 14:33
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/09/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-05 D
 Client ID: TG04-MW-01-230106
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/06/23 10:30
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/07/23 16:18
 Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatiles Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	5.0	0.83	5
Benzene	580		ug/l	2.5	0.80	5
1,2-Dichloroethane	ND		ug/l	2.5	0.66	5
Toluene	11		ug/l	3.8	1.0	5
1,2-Dibromoethane	ND		ug/l	10	0.96	5
Ethylbenzene	110		ug/l	2.5	0.84	5
p/m-Xylene	170		ug/l	5.0	1.7	5
o-Xylene	16		ug/l	5.0	2.0	5
Xylenes, Total	190		ug/l	5.0	1.7	5
Isopropylbenzene	75		ug/l	2.5	0.94	5
1,3,5-Trimethylbenzene	13		ug/l	12	1.1	5
1,2,4-Trimethylbenzene	54		ug/l	12	0.96	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	105		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	91		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-06
 Client ID: S-219-230106
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/06/23 09:50
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/09/23 14:41
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/09/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-06
 Client ID: S-219-230106
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/06/23 09:50
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/07/23 15:54
 Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	0.28	J	ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	98		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-07
 Client ID: TB-230106-2
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/06/23 00:00
 Date Received: 01/06/23
 Field Prep: None

Sample Depth:

Matrix: Water
 Analytical Method: 1,8011
 Analytical Date: 01/09/23 14:50
 Analyst: AMM

Extraction Method: EPA 8011
 Extraction Date: 01/09/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Microextractables by GC - Westborough Lab							
1,2-Dibromoethane	ND		ug/l	0.010	0.005	1	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-07
 Client ID: TB-230106-2
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/06/23 00:00
 Date Received: 01/06/23
 Field Prep: None

Sample Depth:

Matrix: Water
 Analytical Method: 1,8260D
 Analytical Date: 01/07/23 15:31
 Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	1.0	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
Toluene	ND		ug/l	0.75	0.20	1
1,2-Dibromoethane	ND		ug/l	2.0	0.19	1
Ethylbenzene	ND		ug/l	0.50	0.17	1
p/m-Xylene	ND		ug/l	1.0	0.33	1
o-Xylene	ND		ug/l	1.0	0.39	1
Xylenes, Total	ND		ug/l	1.0	0.33	1
Isopropylbenzene	ND		ug/l	0.50	0.19	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	98		70-130

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8011
Analytical Date: 01/09/23 11:35
Analyst: AMM

Extraction Method: EPA 8011
Extraction Date: 01/09/23 10:06

Parameter	Result	Qualifier	Units	RL	MDL	
Microextractables by GC - Westborough Lab for sample(s): 01-07 Batch: WG1730665-1						
1,2-Dibromoethane	ND		ug/l	0.010	0.005	A

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8260D
 Analytical Date: 01/07/23 13:35
 Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-07 Batch: WG1731384-5					
Methyl tert butyl ether	ND		ug/l	1.0	0.17
Benzene	ND		ug/l	0.50	0.16
1,2-Dichloroethane	ND		ug/l	0.50	0.13
Toluene	ND		ug/l	0.75	0.20
1,2-Dibromoethane	ND		ug/l	2.0	0.19
Ethylbenzene	ND		ug/l	0.50	0.17
p/m-Xylene	ND		ug/l	1.0	0.33
o-Xylene	ND		ug/l	1.0	0.39
Xylenes, Total	ND		ug/l	1.0	0.33
Isopropylbenzene	ND		ug/l	0.50	0.19
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.22
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.19

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	97		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300961

Project Number: P044.001.002

Report Date: 01/11/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Microextractables by GC - Westborough Lab Associated sample(s): 01-07 Batch: WG1730665-2									
1,2-Dibromoethane	117		-		80-120	-		20	A

Lab Control Sample Analysis Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

Parameter	LCS		LCSD		%Recovery Limits	RPD	RPD	
	%Recovery	Qual	%Recovery	Qual			Qual	Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-07 Batch: WG1731384-3 WG1731384-4								
Methyl tert butyl ether	84		92		63-130	9		20
Benzene	95		98		70-130	3		20
1,2-Dichloroethane	88		91		70-130	3		20
Toluene	99		100		70-130	1		20
1,2-Dibromoethane	97		99		70-130	2		20
Ethylbenzene	96		97		70-130	1		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		95		70-130	0		20
Isopropylbenzene	99		100		70-130	1		20
1,3,5-Trimethylbenzene	99		100		64-130	1		20
1,2,4-Trimethylbenzene	99		100		70-130	1		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	95		99		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	107		110		70-130
Dibromofluoromethane	94		95		70-130



SEMIVOLATILES

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-01
 Client ID: TG07-MW-05-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 09:50
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/10/23 16:29
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 01/10/23 12:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	17		ug/l	0.10	0.05	1
Fluorene	2.7		ug/l	0.10	0.01	1
Phenanthrene	2.4		ug/l	0.05	0.02	1
Anthracene	0.27		ug/l	0.10	0.01	1
Pyrene	0.22		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.07		ug/l	0.05	0.02	1
Chrysene	0.04	J	ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.03	J	ug/l	0.05	0.01	1
Benzo(a)pyrene	0.04	J	ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	0.01	J	ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	110		23-120
2-Fluorobiphenyl	66		15-120
4-Terphenyl-d14	57		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-02
 Client ID: TG07-MW-04-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 11:05
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/08/23 13:53
 Analyst: WR

Extraction Method: EPA 3510C
 Extraction Date: 01/07/23 07:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	4.8		ug/l	0.10	0.01	1
Phenanthrene	4.6		ug/l	0.05	0.02	1
Anthracene	0.43		ug/l	0.10	0.01	1
Pyrene	0.42		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.14		ug/l	0.05	0.02	1
Chrysene	0.11		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.07		ug/l	0.05	0.01	1
Benzo(a)pyrene	0.07	J	ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	0.02	J	ug/l	0.10	0.01	1
Benzo(ghi)perylene	0.02	J	ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	91		15-120
4-Terphenyl-d14	102		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-03
 Client ID: TG07-MW-01-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 14:20
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/08/23 14:09
 Analyst: WR

Extraction Method: EPA 3510C
 Extraction Date: 01/07/23 07:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	0.13		ug/l	0.10	0.01	1
Phenanthrene	0.20		ug/l	0.05	0.02	1
Anthracene	0.05	J	ug/l	0.10	0.01	1
Pyrene	0.14		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.08		ug/l	0.05	0.02	1
Chrysene	0.03	J	ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.02	J	ug/l	0.05	0.01	1
Benzo(a)pyrene	0.02	J	ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	0.01	J	ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	116		23-120
2-Fluorobiphenyl	88		15-120
4-Terphenyl-d14	81		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-04
 Client ID: TG07-MW-08-230105
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/05/23 15:05
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/08/23 14:25
 Analyst: WR

Extraction Method: EPA 3510C
 Extraction Date: 01/07/23 07:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	3.1		ug/l	0.10	0.05	1
Fluorene	2.9		ug/l	0.10	0.01	1
Phenanthrene	1.8		ug/l	0.05	0.02	1
Anthracene	0.24		ug/l	0.10	0.01	1
Pyrene	0.86		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.18		ug/l	0.05	0.02	1
Chrysene	0.07	J	ug/l	0.10	0.01	1
Benzo(b)fluoranthene	0.03	J	ug/l	0.05	0.01	1
Benzo(a)pyrene	0.02	J	ug/l	0.10	0.02	1
Indeno(1,2,3-cd)pyrene	0.01	J	ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	87		15-120
4-Terphenyl-d14	104		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-05
 Client ID: TG04-MW-01-230106
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/06/23 10:30
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/08/23 15:14
 Analyst: WR

Extraction Method: EPA 3510C
 Extraction Date: 01/07/23 07:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	9.4		ug/l	0.10	0.05	1
Fluorene	0.92		ug/l	0.10	0.01	1
Phenanthrene	0.25		ug/l	0.05	0.02	1
Anthracene	0.11		ug/l	0.10	0.01	1
Pyrene	0.06	J	ug/l	0.10	0.02	1
Benzo(a)anthracene	0.10		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	135	Q	23-120
2-Fluorobiphenyl	99		15-120
4-Terphenyl-d14	96		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-06
 Client ID: S-219-230106
 Sample Location: 3144 W PASSYUNK AVE.

Date Collected: 01/06/23 09:50
 Date Received: 01/06/23
 Field Prep: Refer to COC

Sample Depth:

Matrix: Water
 Analytical Method: 1,8270E-SIM
 Analytical Date: 01/08/23 15:30
 Analyst: WR

Extraction Method: EPA 3510C
 Extraction Date: 01/07/23 07:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Naphthalene	ND		ug/l	0.10	0.05	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.05	0.02	1
Anthracene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
Benzo(a)anthracene	0.18		ug/l	0.05	0.02	1
Chrysene	ND		ug/l	0.10	0.01	1
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	121	Q	23-120
2-Fluorobiphenyl	92		15-120
4-Terphenyl-d14	93		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

**Method Blank Analysis
Batch Quality Control**

Analytical Method: 1,8270E-SIM
Analytical Date: 01/06/23 18:22
Analyst: AH

Extraction Method: EPA 3510C
Extraction Date: 01/06/23 08:28

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 02-06 Batch: WG1730640-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	0.03	J	ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	0.04	J	ug/l	0.10	0.02
Benzo(a)anthracene	0.02	J	ug/l	0.05	0.02
Chrysene	0.02	J	ug/l	0.10	0.01
Benzo(b)fluoranthene	0.01	J	ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	111		23-120
2-Fluorobiphenyl	71		15-120
4-Terphenyl-d14	88		41-149

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

**Method Blank Analysis
 Batch Quality Control**

Analytical Method: 1,8270E-SIM
 Analytical Date: 01/10/23 16:12
 Analyst: JJW

Extraction Method: EPA 3510C
 Extraction Date: 01/10/23 12:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1731825-1					
Naphthalene	ND		ug/l	0.10	0.05
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.05	0.02
Anthracene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
Benzo(a)anthracene	ND		ug/l	0.05	0.02
Chrysene	ND		ug/l	0.10	0.01
Benzo(b)fluoranthene	ND		ug/l	0.05	0.01
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	104		23-120
2-Fluorobiphenyl	69		15-120
4-Terphenyl-d14	67		41-149

Lab Control Sample Analysis Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 02-06 Batch: WG1730640-2 WG1730640-3								
Naphthalene	51		81		40-140	45	Q	40
Fluorene	65		86		40-140	28		40
Phenanthrene	70		87		40-140	22		40
Anthracene	72		89		40-140	21		40
Pyrene	83		100		26-127	19		40
Benzo(a)anthracene	78		92		40-140	16		40
Chrysene	78		91		40-140	15		40
Benzo(b)fluoranthene	77		95		40-140	21		40
Benzo(a)pyrene	81		97		40-140	18		40
Indeno(1,2,3-cd)pyrene	86		101		40-140	16		40
Benzo(ghi)perylene	79		93		40-140	16		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	84		125	Q	23-120
2-Fluorobiphenyl	56		80		15-120
4-Terphenyl-d14	85		101		41-149



Lab Control Sample Analysis Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1731825-2 WG1731825-3								
Naphthalene	55		66		40-140	18		40
Fluorene	60		69		40-140	14		40
Phenanthrene	61		68		40-140	11		40
Anthracene	62		70		40-140	12		40
Pyrene	61		66		26-127	8		40
Benzo(a)anthracene	65		73		40-140	12		40
Chrysene	64		70		40-140	9		40
Benzo(b)fluoranthene	66		71		40-140	7		40
Benzo(a)pyrene	69		76		40-140	10		40
Indeno(1,2,3-cd)pyrene	77		81		40-140	5		40
Benzo(ghi)perylene	70		75		40-140	7		40

Surrogate	LCS %Recovery	Qual	LCS %Recovery	Qual	Acceptance Criteria
Nitrobenzene-d5	90		113		23-120
2-Fluorobiphenyl	59		70		15-120
4-Terphenyl-d14	60		65		41-149



METALS



Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300961**Project Number:** P044.001.002**Report Date:** 01/11/23**SAMPLE RESULTS**

Lab ID: L2300961-01

Date Collected: 01/05/23 09:50

Client ID: TG07-MW-05-230105

Date Received: 01/06/23

Sample Location: 3144 W PASSYUNK AVE.

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	01/09/23 09:06	01/09/23 16:35	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300961

Project Number: P044.001.002

Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-02

Date Collected: 01/05/23 11:05

Client ID: TG07-MW-04-230105

Date Received: 01/06/23

Sample Location: 3144 W PASSYUNK AVE.

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	01/09/23 09:06	01/09/23 16:40	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300961

Project Number: P044.001.002

Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-03

Date Collected: 01/05/23 14:20

Client ID: TG07-MW-01-230105

Date Received: 01/06/23

Sample Location: 3144 W PASSYUNK AVE.

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	0.5930	J	ug/l	1.000	0.3430	1	01/09/23 09:06	01/09/23 16:45	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300961

Project Number: P044.001.002

Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-04

Date Collected: 01/05/23 15:05

Client ID: TG07-MW-08-230105

Date Received: 01/06/23

Sample Location: 3144 W PASSYUNK AVE.

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	01/09/23 09:06	01/09/23 17:10	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300961

Project Number: P044.001.002

Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-05

Date Collected: 01/06/23 10:30

Client ID: TG04-MW-01-230106

Date Received: 01/06/23

Sample Location: 3144 W PASSYUNK AVE.

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	01/09/23 09:06	01/09/23 17:15	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300961

Project Number: P044.001.002

Report Date: 01/11/23

SAMPLE RESULTS

Lab ID: L2300961-06

Date Collected: 01/06/23 09:50

Client ID: S-219-230106

Date Received: 01/06/23

Sample Location: 3144 W PASSYUNK AVE.

Field Prep: Refer to COC

Sample Depth:

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Lead, Dissolved	ND		ug/l	1.000	0.3430	1	01/09/23 09:06	01/09/23 17:21	EPA 3005A	1,6020B	SV



Project Name: FORMER PHILADELPHIA REFINERY

Lab Number: L2300961

Project Number: P044.001.002

Report Date: 01/11/23

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-06 Batch: WG1731110-1									
Lead, Dissolved	ND	ug/l	1.000	0.3430	1	01/09/23 09:06	01/09/23 15:53	1,6020B	SV

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis**Batch Quality Control****Project Name:** FORMER PHILADELPHIA REFINERY**Lab Number:** L2300961**Project Number:** P044.001.002**Report Date:** 01/11/23

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06 Batch: WG1731110-2								
Lead, Dissolved	100		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1731110-3 QC Sample: L2300961-01 Client ID: TG07-MW-05-230105											
Lead, Dissolved	ND	530	539.3	102	-	-	-	-	75-125	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: FORMER PHILADELPHIA REFINERY

Project Number: P044.001.002

Lab Number: L2300961

Report Date: 01/11/23

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-06 QC Batch ID: WG1731110-4 QC Sample: L2300961-01 Client ID: TG07-MW-05-230105						
Lead, Dissolved	ND	ND	ug/l	NC		20

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300961**Project Number:** P044.001.002**Report Date:** 01/11/23**Sample Receipt and Container Information**

Were project specific reporting limits specified?

YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300961-01A	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-01B	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-01C	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-01D	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-01E	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-01F	Plastic 250ml HNO3 preserved	A	<2	<2	4.3	Y	Absent		PB-6020S-PPB(180)
L2300961-01G	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-01H	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-02A	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-02B	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-02C	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-02D	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-02E	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-02F	Plastic 250ml HNO3 preserved	A	<2	<2	4.3	Y	Absent		PB-6020S-PPB(180)
L2300961-02G	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-02H	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-03A	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-03B	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-03C	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-03D	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-03E	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-03F	Plastic 250ml HNO3 preserved	A	<2	<2	4.3	Y	Absent		PB-6020S-PPB(180)
L2300961-03G	Amber 250ml unpreserved	A	9	9	4.3	Y	Absent		PA-PAHSIM-LVI(7)

Project Name: FORMER PHILADELPHIA REFINERY**Lab Number:** L2300961**Project Number:** P044.001.002**Report Date:** 01/11/23**Container Information**

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300961-03H	Amber 250ml unpreserved	A	9	9	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-04A	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-04B	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-04C	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-04D	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-04E	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-04F	Plastic 250ml HNO3 preserved	A	<2	<2	4.3	Y	Absent		PB-6020S-PPB(180)
L2300961-04G	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-04H	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-05A	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-05B	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-05C	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-05D	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-05E	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-05F	Plastic 250ml HNO3 preserved	A	<2	<2	4.3	Y	Absent		PB-6020S-PPB(180)
L2300961-05G	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-05H	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-06A	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-06B	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-06C	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-06D	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-06E	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)
L2300961-06F	Plastic 250ml HNO3 preserved	A	<2	<2	4.3	Y	Absent		PB-6020S-PPB(180)
L2300961-06G	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-06H	Amber 250ml unpreserved	A	7	7	4.3	Y	Absent		PA-PAHSIM-LVI(7)
L2300961-07A	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-07B	Vial HCl preserved	A	NA		4.3	Y	Absent		PA-8260(14)
L2300961-07C	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)

Project Name: FORMER PHILADELPHIA REFINERY

Project Number: P044.001.002

Serial_No:01112312:39

Lab Number: L2300961

Report Date: 01/11/23

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2300961-07D	Vial Na2S2O3 preserved	A	NA		4.3	Y	Absent		8011(14)

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers



Project Name: FORMER PHILADELPHIA REFINERY
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Lab Number: L2300961
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Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA, this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- F** - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively

Report Format: DU Report with 'J' Qualifiers



Project Name: FORMER PHILADELPHIA REFINERY
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Data Qualifiers

Identified Compounds (TICs).

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- V** - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)
- Z** - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: FORMER PHILADELPHIA REFINERY
Project Number: P044.001.002

Lab Number: L2300961
Report Date: 01/11/23

REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene

EPA 625/625.1: alpha-Terpeneol

EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.

EPA 8270D/8270E: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine, alpha-Terpeneol; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO₂, NO₃.

Mansfield Facility

SM 2540D: TSS

EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.

EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene,

3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.

Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2:** Nitrate-N, Nitrite-N; **SM4500NO3-F:** Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE,**

EPA 180.1, SM2130B, SM4500CI-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B

EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.

Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT, SM9222D.**

Non-Potable Water

SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1:**

Ammonia-N, **LCHAT 10-107-06-1-B:** Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2:** Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E,**

SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.

EPA 624.1: Volatile Halocarbons & Aromatics,

EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II,

Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs

EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045:** PCB-Oil.

Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water

EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1 Hg.**

EPA 522, EPA 537.1.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.

EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.

EPA 245.1 Hg.

SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.



CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 1/7/23

ALPHA Job #: 2300961

Client Information

Client: Terraphase Engineering
 Address: 160 Canal Pointe Blvd
 Princeton NJ 08540 Suite 108
 Phone: 215 297 3502
 Fax:
 Email: nick_scala@terrphase.com
 These samples have been previously analyzed by Alpha

Project Information

Project Name: Former Philadelphia Refinery
 Project Location: 344 Passyunk Ave
 Project #: P044.001.002
 Project Manager: Nick Scala
 ALPHA Quote #:

Report Information - Data Deliverables

FAX EMAIL
 ADEx Add'l Deliverables

Billing Information

Same as Client info PO #:

Turn-Around Time

Standard RUSH (only confirmed if pre-approved!)
 Date Due: 48 hr TAT Time:

Regulatory Requirements/Report Limits

State/Fed Program	Criteria

Other Project Specific Requirements/Comments/Detection Limits:
 EDD @ Terraphase.com
 Equi EDD
 * See attached sheet for Short List compounds.

ANALYSIS	Vec's - Short List 1-5	SVC's - Short List 1-5	Vec's - Short List 1-6	SVC's - Short List 1-6	Lead	SAMPLE HANDLING		TOTAL # BOTTLES
						Filtration	Preservation	
						<input type="checkbox"/> Done	<input type="checkbox"/> Lab to do	
						<input checked="" type="checkbox"/> Not needed (see)	<input type="checkbox"/> Lab to do (see)	
						<input type="checkbox"/> Lab to do	<input type="checkbox"/> Lab to do	
						(Please specify below)		

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS						Sample Specific Comments	TOTAL # BOTTLES			
		Date	Time			Vec's - Short List 1-5	SVC's - Short List 1-5	Vec's - Short List 1-6	SVC's - Short List 1-6	Lead						
00961-01	T6-07-MW-05-230105	1/5/23	0950	GW	KJO		X	X	X						48 hr Rush	8
02	T6-07-MW-04-230105	1/5/23	1105	GW	KJO		X	X	X						48 hr Rush	8
03	T6-07-MW-01-230105	1/5/23	1420	GW	NAK		X	X	X						48 hr Rush	8
04	T6-07-MW-08-230105	1/5/23	1505	GW	KJO		X	X	X						48 hr Rush	8
05	T6-04-MW-01-230106	1/6/23	1030	GW	KJO	X	X		X						48 hr Rush	8
06	S-219-230106	1/6/23	0950	GW	NAK	X	X		X						48 hr Rush	8
07	TB-230106-2	1/6/23	1120	TB	KJO	X	X								48 hr Rush	8

Container Type	Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
Tom O'Rourke	1/6/23 1455	JT AAL	1/6/23 1455
Sit	1/6/23 1800	TL AAL	1/6/23 1800
	1/6/23 2120		1-6-23 2100

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

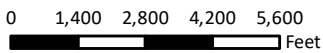
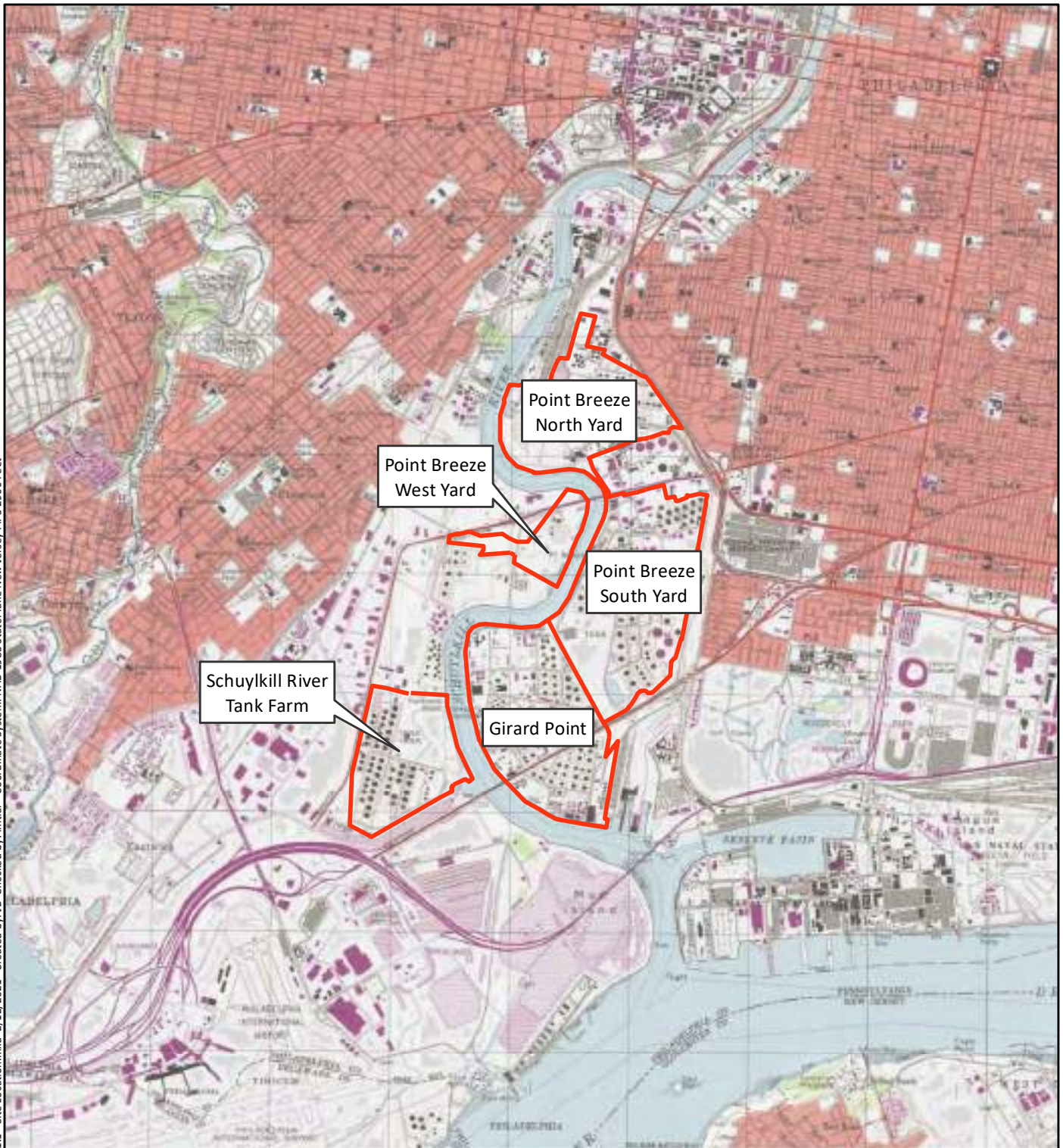
- **Short List 1. *Leaded Gasoline, Aviation Gasoline and Jet Fuel***: benzene, toluene, ethyl benzene, xylenes (total), cumene, naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dichloroethane, 1,2-dibromoethane, and lead.
- **Short List 2. *Unleaded Gasoline***: benzene, toluene, ethyl benzene, xylenes (total), cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- **Short List 3. *Kerosene, Fuel Oil No. 1***: benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene.
- **Short List 4. *Diesel Fuel and Fuel Oil No. 2***: benzene, toluene, ethyl benzene, cumene, methyl tert-butyl ether, naphthalene, 1,2,4-trimethyl benzene, and 1,3,5-trimethyl benzene.
- **Short List 5. *Fuel Oil Nos. 4, 5, and 6, and Lubricating Oils and Fluids***: benzene, naphthalene, fluorene, anthracene, phenanthrene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, and benzo(g,h,i)perylene.
- **Short List 6. *Waste Oil***: benzene, toluene, ethyl benzene, cumene, naphthalene (Method 8270), pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(g,h,i)pyrene, and lead.

Appendix K

PNDI



File: N:\GIS\Prj\044.001_PESRM-PE5\MXD\AST Work\Figure 1.1 - Site Location.mxd 2/17/2021 Created by: JD Checked by: Initial Coordinate System: NAD 1983 StatePlane New Jersey FIPS 2900 Feet



1 inch = 4,000 feet



Legend

— Property Boundary

Base Map: USGS Philadelphia 1994 7.5 Minute Quadrangle.

SAFETY FIRST



CLIENT: Philadelphia Energy Solutions Refining and Marketing LLC

PROJECT: Aboveground Storage Tank Closure

PROJECT NUMBER: P044.001.002

Site Location

FIGURE 1.1

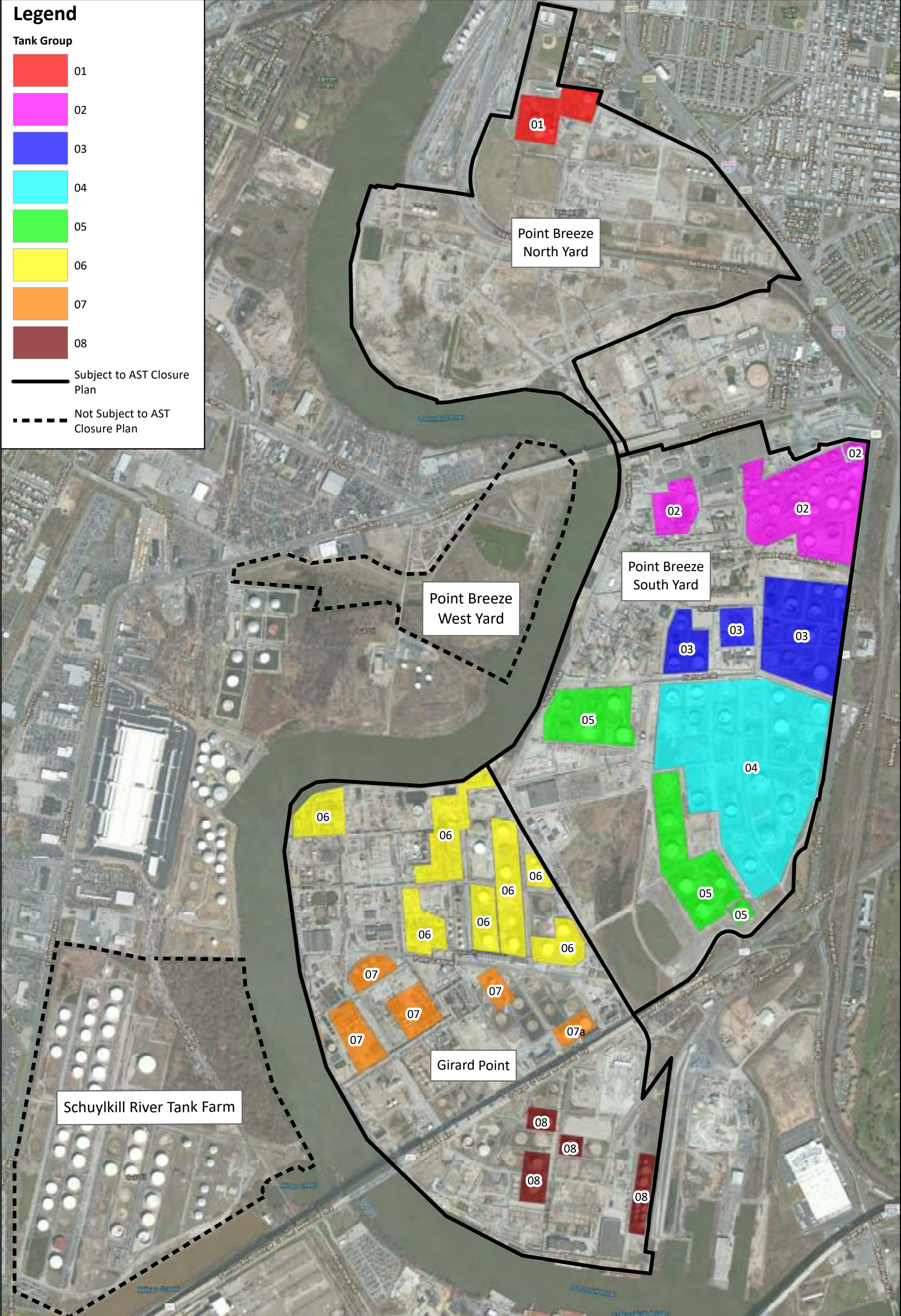
Legend

Tank Group

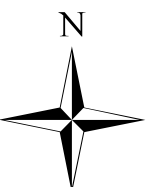
- 01
- 02
- 03
- 04
- 05
- 06
- 07
- 08

Subject to AST Closure Plan

Not Subject to AST Closure Plan



File: N:\GIS\Prj\044_001_PESRM-PES\WXDS\AST Work\Figure 1.2 - Site Layout.mxd 2/26/2021 Created by: JD Checked by: Initial Coordinate System: NAD 1983 StatePlane Pennsylvania South FIPS 3702 Feet



Notes: Aerial imagery source Maxar 10/19/2019

0 300 600 900 1,200
Feet

1 inch = 1,000 feet

DRAFT

SAFETY FIRST

CLIENT:	Philadelphia Energy Solutions Refining and Marketing LLC
PROJECT:	Aboveground Storage Tank Closure
PROJECT NUMBER:	P044.001.002

Site Layout and AST Closure Phase

FIGURE 1.2

Project Description – PNDI-776056

Terraphase Engineering Inc. (Terraphase) is supporting Philadelphia Energy Solutions Refining and Marketing LLC (PESRM), with the closure of several Aboveground Storage Tanks (ASTs) in accordance with the Storage Tank and Spill Prevention Act (Act 32) and 25 Pa. Code 245, that will be emptied, cleaned, dismantled, and removed during the demolition and redevelopment of the Point Breeze Terminal (Facility ID 51-33620) and Girard Point (Facility ID 51-33624) at the former Philadelphia Energy Solutions (PES) Refinery located at 3144 West Passyunk Avenue, Philadelphia, PA (Site) (Figure 1.1).

The Site is a 1,300-acre former refinery that is being repurposed and redeveloped into a state of the art, multimodal industrial park with ancillary rail infrastructure, energy infrastructure, marine capabilities, and commercial uses. To facilitate redevelopment, existing infrastructure at the Site, including the ASTs, will be demolished. Demolition is anticipated to progress generally from north to south with AST removal to be completed for Point Breeze and Girard Point between 2020 and 2024. Terraphase will prepare reports for submission to the Pennsylvania Department of Environmental Protection (PADEP) as the work progresses by Tank Group (Figure 1.2).

This PNDI review request (776056) is associated with Tank Group 04. Tank Group 04 is located approximately 1100 feet east of the Schuylkill River at the nearest point. No wetlands or other potential sensitive receptors are in or adjacent to the Site. The Tank Group consists of approximately 71-acre area within the former PES refinery.



January 13, 2023

IN REPLY REFER TO

SIR# 57292

Terraphase Engineering
Alexander Strohl
1100 E. Hector Street
Conshohocken, Pennsylvania 19428

**RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species
PNDI Search No. 776056_1
Former Philadelphia Refinery - Tank Group 04
Philadelphia City: PHILADELPHIA County**

Dear Alexander Strohl:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search “potential conflict” or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish and Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish and Boat Code (Chapter 75), or the Wildlife Code.

An element occurrence of a rare, candidate, threatened, or endangered species under our jurisdiction is known from the vicinity of the proposed project. However, given the nature of the proposed project, the immediate location, or the current status of the nearby element occurrence(s), no adverse impacts are expected to the species of special concern.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be re-initiated.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 or kgipe@pa.gov and refer to the SIR # 57292. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

A handwritten signature in black ink that reads "Christopher A. Urban". The signature is written in a cursive style with a large initial "C" and "U".

Christopher A. Urban, Chief
Natural Diversity Section

CAU//KDG/dn

January 12, 2023

PNDI Number: 776056
Version: Final_1; 1/3/23

Alexander Strohl
Terraphase Engineering
1100 E. Hector Street, Suite 400
Conshohocken, PA 19428
Email: alexander.strohl@terrphase.com (hard copy will not follow)

Re: Former Philadelphia Refinery – Tank Group 04
Philadelphia, Philadelphia County, PA

Dear Alexander,

Thank you for the submission of the Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review Receipt Number **776056 (Final_1)** for review. PA Department of Conservation and Natural Resources screened this project for potential impacts to species and resources under DCNR's responsibility, which includes plants, terrestrial invertebrates, natural communities, and geologic features only.

No Impact Anticipated

PNDI records indicate species or resources under DCNR's jurisdiction are located in the vicinity of the project. However, based on the information you submitted concerning the nature of the project, the immediate location, and our detailed resource information, DCNR has determined that no impact is likely. No further coordination with our agency is needed for this project.

Recommended Best Management Practices:

- Use a conservative approach to project design that minimizes permanent and temporary disturbances to soil and native vegetation. This will conserve habitat and limit opportunities for invasive plants.
- Clean boot treads, tools, construction equipment, and vehicles thoroughly (especially the undercarriage and wheels) before they are brought on site. This will remove invasive plant seeds and invasive earthworms/cocoons that may have been picked up at other worksites.
- Use clean project materials (e.g., weed-free straw) or materials native to the worksite to avoid introducing invasive species from contaminated sources.
- Revegetate or cover disturbed soil and stockpiles quickly to discourage the germination of invasive plants. Implement proper erosion control practices to stabilize soil and reduce runoff.
- Do not use seed mixes that include invasive species. More information about invasive plants in Pennsylvania can be found at the following link: <http://www.dcnr.pa.gov/Conservation/WildPlants/InvasivePlants/Pages/default.aspx>
- Use habitat appropriate seed mixes. For example, use a riparian seed mix when reseeding along a waterway. The Bureau of Forestry Planting & Seeding Guidelines can be found at the following link for recommendations: http://www.docs.dcnr.pa.gov/cs/groups/public/documents/document/dcnr_20031083.pdf

- Use native plants for landscaping, revegetation, and stormwater management. Do not use nonnative invasive species. Reduce the area of lawn and impermeable surfaces to the fullest extent practicable in favor of native gardens or habitat restoration (e.g., forest, meadow, wetland, etc.). More information about lawn conversion can be found at the following link: <https://www.dcnr.pa.gov/Conservation/Water/LawnConversion/Pages/default.aspx>
- Plant forest buffers where trees were historically present along streams, wetlands, and bodies of water. Buffers should be a minimum of 35 feet in width (ideally at least 100 feet in width). Where trees are not appropriate (e.g., powerline rights-of-way), buffer with native shrubs and herbaceous plants. More information about riparian buffers can be found at the following link: <https://www.dcnr.pa.gov/Conservation/Water/RiparianBuffers/Pages/default.aspx>
- Manage road/utility rights-of-way, median strips, edges, and other green spaces for diverse native plant communities and wildlife (e.g., monarch butterfly). In seed mixes, include wildflowers that have overlapping bloom periods and provide forage for pollinators throughout the growing season. Avoid blanket herbicide applications; instead, spot-treat undesirable tall woody vegetation and invasive weeds. Where mowing is necessary, reduce frequency to once every few years during the dormant season (i.e., after first frost in late fall and before bird nesting in early spring), leaving some refugia for overwintering wildlife.
- Monitor for invasive plants before, during, and after project activities and promptly control any identified infestations. Frequent monitoring allows for early detection and rapid response.

This response represents the most up-to-date review of the PNDI data files and is valid for two (2) years only. If project plans change or more information on listed or proposed species becomes available, our determination may be reconsidered. Should the proposed work continue beyond the period covered by this letter and a permit has not been acquired, please resubmit the project to this agency as an “Update” (including an updated PNDI receipt, project narrative, description of project changes and accurate map). As a reminder, this finding applies to potential impacts under DCNR’s jurisdiction only. Visit the PNHP website for directions on contacting the Commonwealth’s other resource agencies for environmental review.

Should you have any questions or concerns, please contact Jason Ryndock, Ecological Information Specialist, by phone (717-705-2822) or via email (c-jryndock@pa.gov).

Sincerely,



Greg Podnieszinski, Section Chief
Natural Heritage Section

1. PROJECT INFORMATION

Project Name: **Former Philadelphia Refinery - Tank Group 04**

Date of Review: **1/3/2023 09:19:47 PM**

Project Category: **Hazardous Waste Clean-up, Site Remediation, and Reclamation, Spill (e.g., oil, chemical)**

Project Area: **68.91 acres**

County(s): **Philadelphia**

Township/Municipality(s): **PHILADELPHIA**

ZIP Code:

Quadrangle Name(s): **PHILADELPHIA**

Watersheds HUC 8: **Schuylkill**

Watersheds HUC 12: **City of Philadelphia-Schuylkill River**

Decimal Degrees: **39.910235, -75.196179**

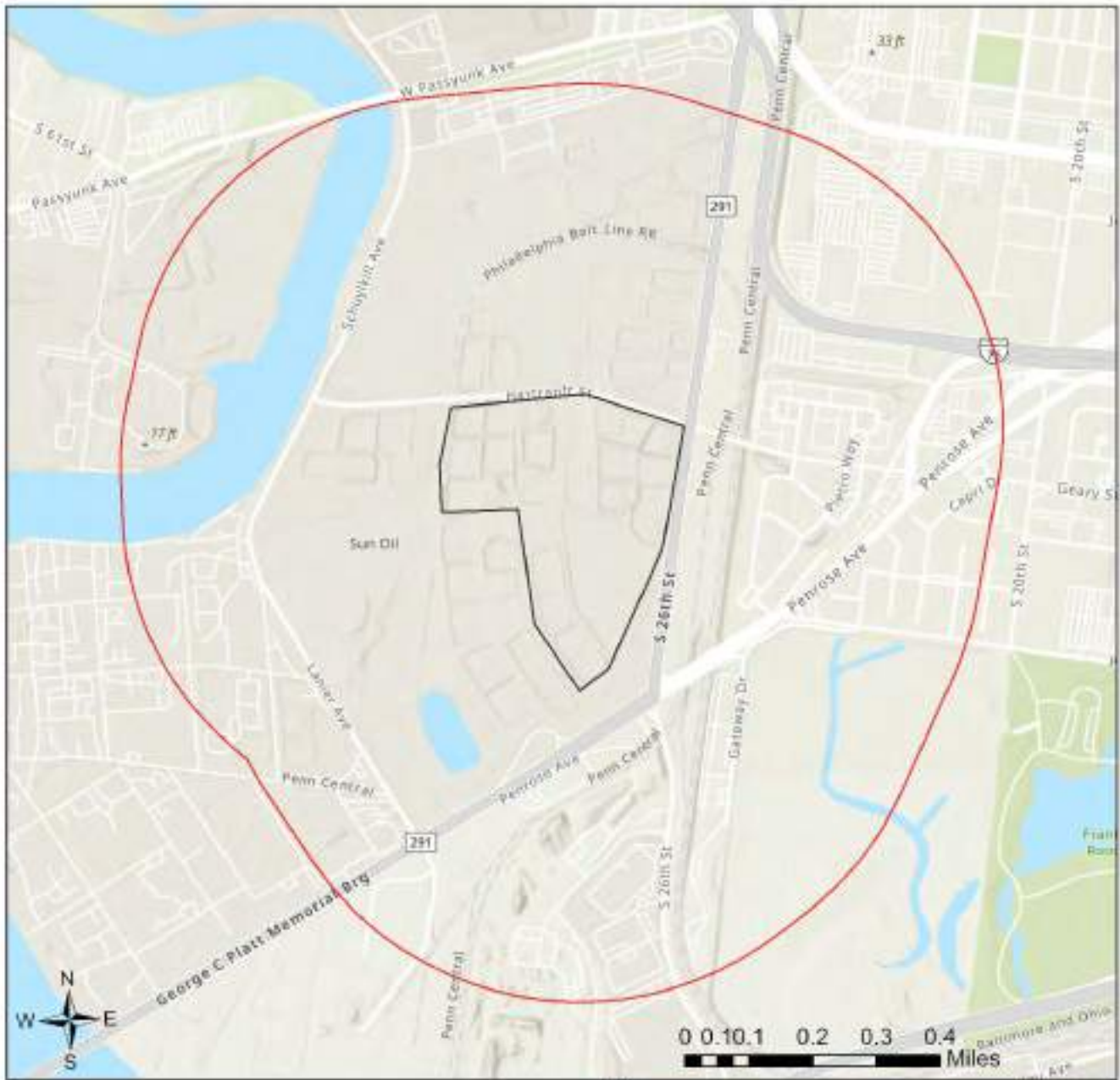
Degrees Minutes Seconds: **39° 54' 36.8445" N, 75° 11' 46.2435" W**



2. SEARCH RESULTS

Agency	Results	Response
PA Game Commission	No Known Impact	No Further Review Required
PA Department of Conservation and Natural Resources	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
PA Fish and Boat Commission	Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
U.S. Fish and Wildlife Service	No Known Impact	No Further Review Required

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

Former Philadelphia Refinery - Tank Group 04



-  Buffered Project Boundary
-  Project Boundary



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, MMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

RESPONSE TO QUESTION(S) ASKED

Q1: Accurately describe what is known about wetland presence in the project area or on the land parcel by selecting ONE of the following. "Project" includes all features of the project (including buildings, roads, utility lines, outfall and intake structures, wells, stormwater retention/detention basins, parking lots, driveways, lawns, etc.), as well as all associated impacts (e.g., temporary staging areas, work areas, temporary road crossings, areas subject to grading or clearing, etc.). Include all areas that will be permanently or temporarily affected -- either directly or indirectly -- by any type of disturbance (e.g., land clearing, grading, tree removal, flooding, etc.). Land parcel = the lot(s) on which some type of project(s) or activity(s) are proposed to occur.

Your answer is: The project area (or land parcel) has not been investigated by someone qualified to identify and delineate wetlands (holding a natural resource degree or equivalent work experience), or it is currently unknown if the project or project activities will affect wetlands.

Q2: Aquatic habitat (stream, river, lake, pond, etc.) is located on or adjacent to the subject property and project activities (including discharge) may occur within 300 feet of these habitats?

Your answer is: No

3. AGENCY COMMENTS

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

PA Game Commission

RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

PA Department of Conservation and Natural Resources

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

DCNR Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here:

<https://conservationexplorer.dcnr.pa.gov/content/survey-protocols>)

Scientific Name	Common Name	Current Status	Proposed Status	Survey Window
Echinochloa walteri	Walter's Barnyard-grass	Endangered	Endangered	Flowers August - September

PA Fish and Boat Commission

RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

PFBC Species: (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below.)

Scientific Name	Common Name	Current Status
Sensitive Species**		Endangered

U.S. Fish and Wildlife Service

RESPONSE:

No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.

** Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload* or email the following information to the agency(s) (see AGENCY CONTACT INFORMATION). Instructions for uploading project materials can be found [here](#). This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies (but not USFWS).

*If information was requested by USFWS, applicants must email, or mail, project information to IR1_ESPenn@fws.gov to initiate a review. USFWS will not accept uploaded project materials.

Check-list of Minimum Materials to be submitted:

___ Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.

___ A map with the project boundary and/or a basic site plan (particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)

In addition to the materials listed above, USFWS REQUIRES the following

___ **SIGNED** copy of a Final Project Environmental Review Receipt

The inclusion of the following information may expedite the review process.

___ Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)

___ Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at <https://conservationexplorer.dcnr.pa.gov/content/resources>.



5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (www.naturalheritage.state.pa.us). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.

6. AGENCY CONTACT INFORMATION

PA Department of Conservation and Natural Resources

Bureau of Forestry, Ecological Services Section
400 Market Street, PO Box 8552
Harrisburg, PA 17105-8552
Email: RA-HeritageReview@pa.gov

PA Fish and Boat Commission

Division of Environmental Services
595 E. Rolling Ridge Dr., Bellefonte, PA 16823
Email: RA-FBPACENOTIFY@pa.gov

U.S. Fish and Wildlife Service

Pennsylvania Field Office
Endangered Species Section
110 Radnor Rd; Suite 101
State College, PA 16801
Email: IR1_ESPenn@fws.gov
NO Faxes Please

PA Game Commission

Bureau of Wildlife Management
Division of Environmental Review
2001 Elmerton Avenue, Harrisburg, PA 17110-9797
Email: RA-PGC_PNDI@pa.gov
NO Faxes Please

7. PROJECT CONTACT INFORMATION

Name: _____
Company/Business Name: _____
Address: _____
City, State, Zip: _____
Phone:(_____) _____ Fax:(_____) _____
Email: _____

8. CERTIFICATION

I certify that ALL of the project information contained in this receipt (including project location, project size/configuration, project type, answers to questions) is true, accurate and complete. In addition, if the project type, location, size or configuration changes, or if the answers to any questions that were asked during this online review change, I agree to re-do the online environmental review.

applicant/project proponent signature

date